

A large wind turbine with three blades, viewed from a low angle against a clear blue sky. The turbine is the central focus of the upper half of the cover.

# WIN-WIN

*How International Trade Can  
Help Meet the Sustainable  
Development Goals*

Edited by Matthias Helble and Ben Shepherd



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the Sustainable Development Goals*

*Edited by*

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# Abbreviations

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AFT	Aid for Trade
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
CBD	Convention on Biological Diversity
CBE	Cross-Border Education
CCC	Copenhagen Consensus Center
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COP	Conference of the Parties
CPC	Central Product Classification
DFQF	duty-free, quota-free
EEZ	exclusive economic zone
EGF	European Globalization Adjustment Fund
ETS	Emissions Trading System
EU	European Union
EUTR	European Union Timber Regulation
FAO	Food and Agriculture Organization
FDI	foreign direct investment
FiBL	Research Institute of Organic Culture
FiT	feed-in tariff
FLEGT	EU Forest Law Enforcement, Governance and Trade
FSS	Forestry Stewardship Council
FTA	free trade agreement
G20	Group of 20
G7	Group of Seven
GATT	General Agreement on Tariffs and Trade
GDP	gross domestic product
GHG	greenhouse gas
GSP	generalized system of preferences
GTS	Working Group on Soy
GVC	global value chain
HS	Harmonized System
IBC	international branch campus
ICT	Information and communication technology
IEA	International Energy Agency
ILO	International Labour Organization
ITC	International Trade Centre
IUCN	International Union for Conservation of Nature and Natural Resources

IUU	illegal, unreported, and unregulated
LCRs	local-content requirements
LDCs	least developed countries
MDGs	Millennium Development Goals
MFN	most favored nation
MOOC	massive open online course
MSITS	Manual on Services of International Trade in Services
NAFTA	North American Free Trade Agreement
NDCs	Nationally Determined Contributions
NEG	new economic geography
NGO	nongovernment organization
NTB	nontariff barriers
NTM	nontariff measure
OECD	Organisation for Economic Co-operation and Development
OWG	Open Working Group
PEFC	Programme for the Endorsement of Forest Certification
PRC	People's Republic of China
PSS	private sustainability standards
PTA	preferential trade agreement
Q-SSM	quantity-based SSM
R&D	research and development
RCA	revealed comparative advantage
REDD	Reducing Emissions from Deforestation and Forest Degradation
RTA	regional trade agreement
SBTC	skill-biased technological change
SDGs	Sustainable Development Goals
SDT	special and differential treatment
SIDS	Small Island Developing States
SPS	Sanitary and Phytosanitary
SSM	Special Safeguard Mechanism
STRI	Services Trade Restrictiveness Index
TBT	Technical Barriers to Trade
TFA	Trade Facilitation Agreement
TFTA	Tripartite Free Trade Area
TiSA	Trade in Services Agreement
TPP	Trans-Pacific Partnership
TRAINS	Trade Analysis Information System
TRIPS	Trade-Related Aspects of Intellectual Property Rights
TTIP	Transatlantic Trade and Investment Partnership
UEBT	Union for Ethical BioTrade
UN	United Nations

UNCTAD	UN Conference on Trade and Development
UNESCAP	UN Economic and Social Commission for Asia and the Pacific
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFSS	UN Forum on Sustainability Standards
US	United States
VPA	Voluntary Partnership Agreement
VSS	voluntary sustainability standards
VW	Volkswagen
WASH	Water Access, Hygiene and Sanitation
WHO	World Health Organization
WTO	World Trade Organization

# Preface

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The Sustainable Development Goals (SDGs) were adopted in September 2015 by the members of the United Nations after a lengthy negotiation process. The SDGs cover basically all areas of human development and the protection of planet earth. The 169 targets need to be implemented by both developing as well as developed countries. The agenda in front of everyone is enormous, especially as many countries have only very limited financial and human resources at their disposal.

The promotion of trade integration is not an objective of the SDGs, but is considered an important means to reach the goals. However, the text of the agreement is rather mute on how countries can leverage on trade to achieve the SDGs. This book aims to fill this gap. Written by leading scholars in the area of trade and development, the book provides an authoritative and encompassing analysis on the role trade can play. Trade can be a powerful source for economic transformation. The book looks at both the risks and opportunities of trade opening.

The book constitutes the Asian Development Bank Institute's first major contribution to debate on the SDGs. For Asia, trade has been a tremendous force of progress. From the 1990s, many countries in the region adopted an export-oriented growth strategy which helped them attract foreign direct investment and integrate into regional and global value chains. The subsequent economic growth lifted millions out of poverty and allowed for substantive improvements in other areas of human development, such as health and education. Asia is thus a prime example of the potential positive force that trade can have. However, trade opening is not without risks and it also makes adjustments necessary. Most importantly, productive factors need to be shifted across sectors and firms. This can mean that workers have to change occupations and look for new opportunities. So far, the benefits of trade opening have outweighed the costs in Asia.

In the future, trade integration will further play a pivotal role in propelling the development of the region. In recent years, countries in the region have invested heavily in upgrading their domestic and cross-border infrastructure, bringing down trade costs substantially. However, additional investment in infrastructure is needed to improve access to international markets. Not only multinational companies benefit from the more integrated Asian market and improved connectivity. Small and medium-sized enterprises (SMEs) in the region are starting to connect to international markets and reap the benefits of improved connectivity.



Countries are also starting to find new solutions to bridge the finance gap that SMEs face and help them to expand more quickly. Overall, better connectivity and the integration of SMEs is thus expected to further boost trade and increase growth in the region.

This book gives guidance to policy makers worldwide to best leverage on the benefits of trade in order to achieve the SDGs. It is the first book on the topic and I am sure that it will be of high interest to all those involved in the implementation of the SDGs. I wish to thank the editors, Matthias Helble, senior economist and co-chair, research department, Asian Development Bank Institute, and Ben Shepherd, principal, Developing Trade Consultants, for their excellent work and for publishing this seminal and timely book. I wish the readers a pleasant and insightful read.

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# 1

## Introduction

*Matthias Helble and Ben Shepherd*

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In September 2015, the members of the United Nations (UN) agreed on a new set of development goals, the so-called UN Sustainable Development Goals (SDGs). As was the case for the UN Millennium Development Goals (MDGs), the SDGs are expected to guide development efforts through the 2030 time horizon. The 17 SDGs cover many areas, such as poverty, health, environment, education, innovation, inequality, urbanization, peace, justice and institutions, and partnerships for development. Interestingly, there is no specific SDG trade goal. Among the 169 SDG targets, there are few references to trade-related objectives, the key ones being promotion of the rules-based multilateral trading system, and implementation of duty-free and quota-free market access for least developed countries, with a doubling of their export market share.

This book comes at a timely moment. The international development community, as well as policy makers in both developed and developing countries, are currently developing road maps on how to best achieve the SDGs. At the same time, there has been a backlash against globalization, mostly in developed economies. The benefits of trade opening are being increasingly called into question. It is therefore crucial to fully understand how trade interacts with the various goals enshrined in the SDGs. Trade integration holds many opportunities for development, but, at the same time, can have risks that need to be managed. The objective of this book is to map out a triple-win scenario: when good trade policy spurs international trade, contributes to development-friendly outcomes, and supports achieving the SDGs. This book provides guidance by leading experts on how to best achieve this.

The nexus between trade and development is not new. Traditionally, trade policy specialists have focused on the income channel, i.e., that openness to international flow of goods and services can increase national income, which in turn enables moving forward on resource-intensive development issues. This argument has been received with a certain skepticism; however, there are various other channels through which trade can contribute to achieving the SDGs. For example, many

countries use tariff and nontariff measures on pharmaceuticals and other medical products. These policies hinder poor people's access to those goods, and undercut the goal of promoting healthy lives in developing countries. Free trade in health-related goods and services could potentially improve developing countries' health care access, with corresponding positive impacts on people's lives. Trade in health services is subject to even bigger barriers that heavily impede access to health care by millions of patients worldwide. The same logic applies to environmental goods and services, where tariff and nontariff barriers increase their cost, hampering the fight against climate change.

This book covers the trade linkages with all 17 SDGs, except for Goal 16: "Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels." Institution building often goes hand in hand with economic development and trade opening. Furthermore, the accession to international trade regimes, such as the World Trade Organization, or the signing of regional and bilateral trade agreements, might also streamline institutions. However, we consider the relationship overly loose to cover it in an analytical piece.

We do not follow the 17 SDGs in order, but divide the book into five parts. Part I introduces the topic, including an analysis of changes in perception of the trade-development nexus. Part II addresses poverty, hunger, and inclusive growth. The chapters of Part III study the links between trade and education and health. Finally, the last part looks at all other linkages between trade and the SDGs, such as urbanization and infrastructure.

The authors of the individual chapters are among the leading experts in trade and development. Each chapter holds the latest knowledge of one or several specific "trade and..." issues, and examines ways in which trade opening can support achieving the SDGs. The chapters also analyze the types of complementary policies that might be necessary, in particular to deal with resulting local losses, as well as adjustment costs. All chapters are stand-alone. The book is conceptualized as a key reference for both the trade and development communities. The book complements the emerging literature on the SDGs themselves by focusing on how trade policy can be used sensibly and pragmatically to support medium-term sustainable development.

## Chapter Overview

Chapter 2 by Patrick Messerlin compares the trade and trade policy issues in the MDGs and the SDGs. The chapter first explains the dramatic changes in the political, economic, and business arenas that

took place from the early 2000s (shaping the MDGs) to the early 2010s (designing the SDGs). The chapter then compares the very different production processes of the MDGs and SDGs. The author concludes by stressing the huge, but largely ignored, common regulatory agenda between trade policies and the SDGs, and argues that a well-designed trade policy could play a key role for improving domestic regulations, and, hence, contribute immensely to the SDGs' goal—a “better life”.

Bernard Hoekman in his chapter shows that trade can and should play an important role in achieving the SDGs, and emphasizes it vis-à-vis services, as realizing many of the goals is conditional on improving developing countries' service sector performance. He predicts that the global environment for trade and investment will be more challenging for low-income countries in the coming decade than it was in the 1990s and 2000s, calling for a sustained government effort to reduce trade costs and support trade in services.

Part I on Poverty, Hunger, and Inclusive Growth starts with a chapter by Irene Brambilla and Guido Porto on trade and poverty reduction. The authors first develop a conceptual framework on how trade can help eradicate poverty using microeconomic and macroeconomic mechanisms, including the effects of policy on consumer prices, producer prices, and wages. As these mechanisms affect real income, they determine the likelihood that a household may be lifted out of or pushed into poverty. The authors then provide a comprehensive overview of the latest evidence on the trade and poverty nexus. While there is sound evidence that trade can be pro-poor, there is significant heterogeneity in its poverty impacts, both across households and countries. This highlights the importance of complementary policies, such as infrastructure, trade facilitation, and social protection.

Will Martin in his chapter shows how agricultural trade is vital for ending hunger by 2030 (SDG 2). While trade is frequently seen as posing threats to this, it can, in fact, play a major role in achieving it. Trade helps in a number of ways, including allowing countries to take advantage of their radically different factor endowments, with land-abundant countries providing exports and land-poor countries taking advantage of much more efficiently produced imports. Trade liberalization can also streamline agricultural production, allowing improvements in dietary diversity, and increasing food access. Allowing trade substantially reduces food price volatility by diversifying supply. By contrast, beggar-thy-neighbor price insulation policies, such as the imposition of export bans in periods of high prices, redistribute rather than reduce volatility.

The chapter by Ben Shepherd and Susan Stone outlines the various channels through which women are part of the global trading economy and highlights their role as consumers, workers, business owners, and

informal cross-border traders. Trade theory offers rich implications for the relationship between gender and trade, but depends on patterns of consumption and production that may differ across countries. As an example, the authors assess manufacturing industries, such as apparel, and what prospects they can offer women workers. These industries are often their entry points into the formal labor market and provide an independent income that can favorably change household power dynamics. New empirical evidence shows that internationally engaged firms from developing countries tend to employ a higher proportion of women workers. However, the authors conclude that much remains to be done, especially as discriminatory norms are deeply ingrained in all countries. Although trade has the potential to support gender-inclusive growth and development, favorable regulations remain important.

In his chapter, Paul Vandenberg asks whether trade can help achieve SDG employment targets. The chapter first examines trade vis-à-vis employment and finds evidence for its positive aggregate impact on welfare, which can lead to job creation. However, freer trade shrinks some sectors and expands others, leading to associated job growth and losses. The author concludes that government policies are needed to cushion the impact of this adjustment and facilitate the movement of labor from declining to rising sectors.

Shujiro Urata and Dionisius A. Narjoko's chapter addresses globalization and equality. The authors survey the literature, which reveals that increased developing country trade openness appears to have narrowed the development gap vis-à-vis developed countries, though its impact on the income gap among developing countries is not clear. Furthermore, the impact of increased trade or trade liberalization on within-country inequalities is mixed. One reason for the mixed findings is the impact of factors other than trade affecting inequalities, including labor market conditions, inflow of capital, and policy reforms. To ensure inclusive trade, the authors recommend a dual approach: more investment in human resources development as well as appropriate income redistribution policies.

Part II on Sustainable Growth starts with a chapter by Dale Andrew on the topic of trade and the environment. The chapter explores how trade can address many issues related to land-based renewable natural resources in the SDGs. Approaches are categorized as to whether they are mandatory or voluntary. Mandatory regulation of trade in nature-based species started over 40 years ago with the Convention on International Trade in Endangered Species. However, mandatory regimes remain relatively limited. The more widespread approach is based on a model of voluntary sustainability standards. However, many stakeholders remain dissatisfied. The economic benefits remain less than expected and there

is limited empirical evidence of improved environmental outcomes. The chapter assesses various improvement options, including a proposal for a Trade Facilitation Agreement for Environmentally Sensitive Products.

Andrew Prag's chapter assesses the interaction of international trade with climate policies, and the influence of trade on the implementation of SDG 13 (climate change). Although international trade contributes directly to greenhouse gas (GHG) emissions, increasing it can help to achieve development goals in a GHG-efficient manner, provided that emissions are correctly priced everywhere. Given that emissions are not universally priced, the chapter examines where policies related to trade may be misaligned with or otherwise hindering climate change objectives. While concluding that the multilateral agreements of the World Trade Organization do not generally prevent governments from pursuing strong domestic climate policies, the chapter does identify potential misalignments. They include import tariffs on environmental goods, barriers to trade in services, and domestic policies designed to support local low-carbon industries, which restrict international trade and are therefore potentially counterproductive. The chapter concludes by stressing the importance of building resilience in the global trading system in the face of increasingly frequent and severe weather-related shocks.

Rashid Sumaila addresses in his chapter the topic of trade and sustainable fisheries, first reviewing the literature on their relationship. Policy recommendations for using fish trade to support the SDGs are then provided under different headings that capture the main concerns highlighted in the literature with respect to the sustainability of fisheries in general and those related to the impact of trade in particular. The policy measures presented have the potential to help ensure that trade in fish and fish products support the SDGs.

Alexandre Le Vernoy explores the direct and indirect nexus between international trade and water use management. The chapter shows that with the right domestic policies and international trade system, trade in water-related services, as well as the transfer of innovation and technologies, can broaden access to water, sanitation, and hygiene. Indirectly, international trade in goods also affects water usage. Through a discussion of the concept of virtual water, the chapter illustrates how countries are relying on trade to source products from abroad to prevent the strain that domestic production would otherwise put on their water resources. With the right policies, data collection, and accounting methods in place, trade in goods may be a powerful tool to help alleviate the water crisis across countries and regions.

In his chapter, Norbert Wilson studies how the freer flow of goods and services internationally can encourage a transition toward more



sustainable consumption and production patterns. He argues that trade restrictions such as nontariff barriers (NTB) may stymie potential gains from trade, which supports the SDGs. This chapter explores the trade effects of different NTBs, especially food and agriculture labeling and safety regulations. The upshot is that trade can enhance economic growth and development. Standards such as labels and food safety regulations may contribute to or, in the worst case, hamper this growth, which affects the capacity to attain the relevant SDGs. He concludes that a careful assessment of industries, proposed standards, multiple outcomes, and power relationships is needed to ensure an overall positive effect of standards on trade and development.

Part III starts with a chapter by Aik Hoe Lim, Pamela Apaza, and Alin Horj, who examine how international trade can help increase both the supply of and investment in higher education, thereby supporting the SDGs. First, the chapter retraces the changing dynamics in higher education and the emergence of novel delivery services. Overall, the authors observe an increasing trend toward internationalization of education services. Despite this, the role of trade agreements and their potential contribution to the respective SDGs has barely been explored. The second part of the chapter, therefore, assesses how trade agreements can facilitate trade in education services and the flexibility they provide for attaining social policy objectives. The authors show how international trade agreements can help achieve the SDG goals by attracting foreign direct investment in education, reducing barriers to entry, leveling the playing field among providers, and providing a predictable and transparent regulatory environment.

Matthias Helble and Ben Shepherd show in their chapter that countries around the world still apply tariffs and nontariff measures on health products such as pharmaceuticals, vaccines, and medical equipment. These barriers often unnecessarily increase prices and limit the availability of health-related products and thus form a strong case for trade liberalization. The authors further argue that facilitating trade, for example by implementing the World Trade Organization's Trade Facilitation Agreement as a starting point can result in improved handling of health-related products such as vaccines, which, in turn, would boost usage. In the last part of the chapter, the authors study the international market for insulin and find that more open trade typically leads to lower insulin prices. The authors conclude that lowering trade barriers on health products can enhance health systems and reduce patients' out-of-pocket payments.

Rupa Chanda's chapter focuses on the impact of health services trade on the realization of the SDGs. In recent years, health service tradability has increased substantially due to better information and

communication technology and a higher mobility of health professionals and patients across borders. The chapter explains the positive and negative implications of health services trade for the SDGs, with the overall impact depending on the specifics of a country's national health care system, the regulatory environment, the policies facilitating or constraining this trade, and the associated externalities. The chapter suggests that trade in health services can be strategically used to address several SDGs, although it may pose potential challenges for equity and sustainability. Countries need to proactively provide a supportive regulatory and infrastructure environment so that the many potential gains associated with health services trade can be enhanced, while the associated negative effects can be minimized or prevented.

Part IV starts with a chapter by Yuan Zhang and Guanghua Wan on trade and urbanization. The authors observe that many developing countries have seen a rapid rise in urbanization in the past decades that coincided with increasing participation in globalization. However, possible links between urbanization and trade openness in developing economies have so far been ignored. The chapter therefore first proposes a simple framework explaining the food trade–population urbanization nexus, showing how the food supply constrains population urbanization and how international trade can change this. Then, it presents historical evidence, empirical tests, and case studies from the People's Republic of China and India, further highlighting the critical role of cereals trade in population urbanization in developing economies. Policy suggestions that may help developing countries achieve more inclusive and sustainable urban development are discussed in the final section of this chapter.

The chapter by Marcelo Olarreaga surveys the literature on trade and development, especially on complementarities associated with trade infrastructure. The empirical literature shows that, on average, trade causes growth, but the relationship is far from homogeneous across countries. Although the empirical literature shows that investment in soft and hard infrastructure has an unambiguously positive impact on trade flows, the theoretical literature argues that priority should be given to enhancing national, rather than international, infrastructure in countries that are relatively poor. This chapter presents data that support this prediction.

The final chapter by William Hynes and Frans Lammersen discusses how aid for trade can contribute to the SDGs. The chapter first highlights the achievements of the current Aid for Trade Initiative and then analyzes the continued importance of aid in financing development, particularly in the least developed countries. Next, the role of the private sector in aid for trade is presented as an example of

how to improve development partnerships. Finally, the chapter draws on lessons from Aid for Trade for the SDGs and the need for, but also the difficulty of, making the process truly country driven. The chapter concludes by stressing that Aid for Trade—12 years after its creation at the World Trade Organization Ministerial Conference in Hong Kong, China—is more than ever relevant in helping developing countries make trade a tool for prosperity.

## **Conclusion**

The recommendations of this book aim at facilitating the use of trade policy as a tool for achieving the SDGs. For trade policy to play this pro-development role, it needs to be developed in close coordination with other sectors. Trade policy can only deliver on development if it is designed coherently and holistically. Another important condition is that adjustments to trade opening are actively facilitated through flanking policies. Since the country context is different each time, these flanking policies will take different forms. However, as this book shows, countries can learn from each other. Overall, we hope that this book puts trade policy in a new light. Opening to international trade carries risks; by managing them and capitalizing on the benefits, trade opening can deliver on sustainable development.

# 2

## From MDGs to SDGs: The Role of Trade

*Patrick Messerlin*

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### **2.1 Introduction**

The impression that the Sustainable Development Goals (SDGs) of the United Nations (UN) have been much less interested in trade issues than its Millennium Development Goals (MDGs) flows neither from there being few places in the former's documents where they are explicitly mentioned, nor to the SDGs having much wider “transformational” ambitions than the MDGs. While the MDGs were shaped with a heavy aid perspective targeting poor countries, the SDGs addressed the roots of world poverty by adopting a holistic development approach, with every country expected to work for them (United Nations Association–UK 2016). With such a change of scale, one should expect that trade would be somewhat “downscaled” compared with their position in the MDGs—as indeed with every other prominent issue in the MDGs. Rather, this impression flows from the SDGs' ideas and suggestions being mere replicas of those highlighted by the MDGs, as if the issues raised by trade policies in the 2010s and beyond resembled those faced between 2000 and 2005. This routine approach signals a profound lack of interest in trade.

This chapter presents an overview of the MDG and SDG trade and policy issues in three sections. Section 2.2 shows the dramatic changes in the political, economic, and business background from the early 2000s (shaping the MDGs) to the early 2010s (designing the SDGs). Section 2.3 focuses on the differences in the inputs used in the preparatory process of the MDGs and SDGs. The MDGs have been largely driven by small teams of experts in a limited number of topics, while the SDGs have relied on the grand-scale UN consulting and negotiating machinery for defining and addressing a much wider agenda. The section also shows how the MDG Gap Reports have failed to bridge the MDGs and SDGs.

Finally, section 2.4 focuses on the MDG and SDG outputs, that is, their goals, targets, and indicators, showing the very different scale of these two endeavors, before making a first tentative economic assessment of the SDGs vis-à-vis trade issues.

## **2.2 Dramatic Changes in the Political, Business, and Analytical Environment**

The preparation phases of the MDGs and the SDGs occurred in dramatically different environments in almost all possible dimensions: increasingly chaotic domestic politics, severe and unresolved economic turbulence, growing tensions in international relations, etc. Having emerged in such different environments, these two endeavors could hardly have been similar even had they wanted to be, which was not the case.

### **2.2.1 The MDG Preparation Phase: Still a Pro-Trade Agenda**

The core MDG preparation phase was from 2002 to 2005, and was a product of then-recent world trade achievements. A pro-trade environment and the successful conclusion of the Uruguay Round in 1995 and the expansion of the topics it covered meant that supporting opening markets was still perceived as beneficial by most world politicians. This was greatly amplified by the broad political and economic consequences of the Fall of the Berlin Wall, which confirmed the prevalence of market economies and suggested a shift from the adversarial United States (US)–Soviet Union relationship to a US–People’s Republic of China (PRC) duopoly, with the PRC seen as slowly but firmly conforming to the Western economic model.

In addition, two events kept trade policy at the center of the world diplomacy and stage. First was the “Millennium Syndrome”, that is, the desire shared by many politicians to use the change of millennium as an opportunity to scale up ambitions and their political visibility. One of the very first manifestations of this happened in trade policy: Sir Leon Brittan, then the European Union (EU) Trade Commissioner, tried to launch a new round of negotiations (the “Millennium” Round) at the new World Trade Organization (WTO) in the very late 1990s. This attempt ultimately failed in the 1999 Seattle WTO Ministerial not so much because of the anti-globalization movement, but because it relied on a fundamental mistake: there was still a decade left before the full implementation of the Uruguay Round commitments. As a result, many

countries, including those in the developed world, were waiting until the last minute to fulfill their commitments in sensitive areas, such as textiles (elimination of quotas) or agriculture (tariffication of existing trade barriers). In such a context, nobody was eager to go back to the negotiating table so soon. The second important political event was the 11 September 2001 attacks on New York and Washington DC that triggered a strong desire among the international community to unite against terrorism. As the WTO is the largest gathering of countries outside the UN, it was the best place to show this short-lived consensus, with its first Round thus launched in Doha, Qatar, only 2 months after the terrorist attacks.

However, the pro-trade agenda faced obstacles from two quarters. First, the most often mentioned—although arguably the less damaging in the long run—was the rise of nongovernment organizations (NGOs), mostly from Organisation for Economic Co-operation and Development (OECD) countries, which, almost invariably, perceived trade as a negative force for their very specific agendas. Those such as Oxfam that took a more balanced view of the trade role in development and governance were relatively few. In this context, the early 2000s witnessed a complex chemistry between the trade community (economists and negotiators) and the anti-free-trade NGOs. Despite their opposing views, both needed the other side. On the one hand, their anti-trade platform notwithstanding, the NGOs had fragmented positive development agendas competing against each other for public attention. On the other hand, the trade community, realizing the progressive lack of public support, was highlighting its role in development. In short, both sides became part of an ecosystem based on the WTO “sound box” in hopes of making their individual goals better known, understood, and supported.

The second obstacle, which was much less apparent in the early 2000s, although it could be seen as the most seriously damaging for trade in the long run, was the fading support for multilateral trade negotiations from the Western business community (most notably in the US). This support was at its zenith among the large firms in the second half of the 1990s when the Uruguay Round expanded the General Agreement on Tariffs and Trade (GATT) coverage to issues such as services and intellectual property rights. However, by the mid-2000s, most large Western firms had already lost interest in the Doha WTO negotiations, which were felt to be too slow—indeed, the arcane discussions on “modalities” did their best to confirm this impression. Even more important, the Doha discussions were increasingly irrelevant for large international firms since they paid scant attention to such issues as norms in goods, market access (and the related regulations) in services, and intellectual property rights. This mismatch became deeper

and more entrenched when large firms found their own alternative to WTO negotiations by designing tailor-made liberalization via global value chains, that is, extracting tariff cuts on specific goods of interest to them in exchange for investments in the countries at stake. These tailor-made tariff cuts and foreign investments had an additional advantage for the firms: they did not need to be “bound” in the GATT–WTO sense, and did not require the huge political investments associated to bound deals.

In the early 2000s, trade still predominated in the MDG program, and policy recommendations were largely dominated by the hope that the 2005 WTO Ministerial in Hong Kong, China could open the door to a successful Doha Round within a few years. As a result, trade was involved at every step of the MDG production process, with a special task force and a special report on Trade and Development (UN Millennium Project 2005a). Trade was part of target 12 on global governance and target 13 on the least developed countries; in addition, it was part of the recommendations of the eighth MDG, “Developing a global partnership for development,” a point examined in more detail in section 2.3.

### **2.2.2 The SDGs’ Preparation: Lack of Interest in Trade**

Twelve years later, the policy and analytical environment of the SDGs is vastly different, following a slow, but continuous political evolution in the developed countries and a brutal world economic shock. Indeed, it is very revealing that, while the early 2000s were rich in anti-trade books, papers, and op-eds, such literature almost disappeared in the early 2010s.

The political evolution, which is related neither to trade nor development, but to the functioning of representative democracies, started in the 1990s when freer trade was still firmly part of the international consensus. Since then, in almost all the large democratic countries, presidential and/or parliamentary elections have repeatedly brought increasingly thin governing majorities. Such ill-elected governments have a hard time fighting even the smallest vested interests, which exacerbates the asymmetrical situation between trade and development. In trade, small vested interests are mostly defensive, and easy to mobilize because they have a strong sense of the potential economic damage in case of liberalization, as well as their own political clout. Offensive trade interests are generally weaker since they don’t perceive as robust or clear the opportunities brought by more open foreign markets, they are often not politically powerful since they are often emerging sectors, and they are simply too busy, with little time for lobbying. The situation in the development-related issues is largely the opposite, where offensive interests with their anti-trade corollaries are

often supported by small groups that lobbied hard at home, but also used the world to bypass local opposition.

In short, during the last 2 to 3 decades, democratic governments elected by increasingly thin majorities have had to face defensive interests in trade issues and offensive interests in development matters. Such a situation could only result in an increasing anti-trade bias, with the SDGs abandoning the more balanced approach on trade and development that prevailed during the MDGs. This was all the easier because, as stressed above, the SDGs have been an intergovernmental process in the UN context.

The SDGs have also been profoundly shaped by the 2008 Great Crisis, which, interestingly, hurt trade's reputation as much as—if not more than—finance. This is strange for two reasons: first, it is not yet very well known that, while there has been a very long financial crisis (especially in the EU), there has been no trade crisis. The trade collapse in 2008–2009 only lasted a few months and was largely driven by the collapse of trust, including among subsidiaries of the same firm located in different countries. Though the WTO annual reports provided information showing the very time-limited trade crisis, the public at large did not pay attention, and still does not realize that trade has been a strong stabilizing force in the post-2008 world economy.

The second strange aspect of the loss of credibility in trade pertained to the criticisms regarding the efficiency of the markets. The belief in “perfect” markets that prevailed in most financial circles before 2008 was never a strong element in trade matters; rather, trade economists spent most of their time looking for more efficient public measures, with one of the oldest basic elements of trade theory (the Stolper-Samuelson theorem) stressing that freer trade will always face opponents since any attempt to eliminate barriers will generate some losers. In this context, no wonder that trade policy requires very determined and proactive governments—in sharp contrast to the widespread public opinion that freer trade strips domestic governments of their powers.

All these forces converged to weaken the SDGs' pro-trade approach. Top politicians became mute on trade, before becoming increasingly outspoken on plain mercantilist actions that started with a focus on job-creating exports in the late 2000s and is ending up in the mid-2010s with unrestrained advocacy for retaliatory tariffs and trade wars. The long agony of the Doha Round has added its burden—even to the point of dividing the trade economists' community, as illustrated by two forums in 2011, that is, the year before the launch of the SDG production process (Messerlin and van der Marel 2011). Following the Doha Round, these two groups split into half a dozen subgroups pushing for different concrete solutions, a recipe for becoming increasingly irrelevant.



## 2.3 Differences in the Production Processes of the MDG and the SDG

The differences in the MDG and SDG environments have extended to their respective philosophies and related production processes. The MDGs were a relatively limited exercise when they were launched, with a carefully defined mandate. That made their production process relatively light and well organized. By contrast, as already mentioned, the SDGs have an agenda that was almost borderless at the beginning; its final definition required several years of debate. It is thus not astonishing that the SDG production process was more volatile and complicated. This section presents in more detail the two preparatory processes before looking at the missed opportunity of the Gap Reports set up by the MDGs for monitoring their implementation until 2015.

### 2.3.1 The MDG Preparatory Phase

The MDG preparation phase was a two-step process. First, a very limited number of top UN officials worked in “relative casualness” for shaping the list of the topics to be addressed. This first step was so short that topics that today seem a must for such an endeavor were nearly overlooked, with environmental issues being included literally at the last minute (Tran 2012). The second phase was a 3- to 4-year work done by the 10 task forces listed in Table 2.1 (task force 5 on Diseases and Medicines was composed of four subtask forces to better address the wide spectrum of its issues). Each task force was invited to write a comprehensive report documenting and analyzing the main issues in the fields covered and suggesting the key MDG targets for the end of 2015. An overview report was then presented (UN Millennium Project 2005b).

As trade was one of the topics listed at the MDGs’ very start, its issues received a fair amount of attention. This enviable situation is illustrated by examining the input side of the MDGs’ production process, that is, the various task forces. Table 2.1 shows an average number of participants of 30 persons per task force. This size seems to allow enough diversity in opinions and analysis while achieving coherence and an acceptable level of consensus when making recommendations. The modest size of all the task forces allowed a smooth process of the whole endeavor, which was facilitated by a very small core group around Secretary General Kofi Annan, comprising Mark Malloch-Brown, Jeffrey Sachs, and a few influential members with both high political visibility and robust economic expertise, such

**Table 2.1 The MDG Production Process: The Inputs**

	Task Forces' Topics	Number of Members	Distribution according to Background				
			Academics	Businesses	International Institutions	National Authorities	NGOs
1	Poverty and Economic Development	35	22.9	0.0	57.1	11.4	8.6
2	Hunger	30	10.0	10.0	30.0	13.3	36.7
3	Education and Gender Equality	30	23.3	0.0	33.3	6.7	36.7
4	Child and Maternal Health	18	33.3	0.0	38.9	22.2	5.6
5A	Access to Essential Medicines	28	21.4	14.3	21.4	17.9	25.0
5B	HIV/AIDS	24	8.3	4.2	33.3	16.7	37.5
5C	Malaria	17	29.4	5.9	41.2	5.9	17.6
5D	Tuberculosis	15	13.3	0.0	40.0	26.7	20.0
6	Environmental Sustainability	21	28.6	0.0	23.8	9.5	38.1
7	Water and Sanitation	26	11.5	3.8	26.9	7.7	50.0
8	Improving the Lives of Slum Dwellers	18	27.8	5.6	11.1	16.7	38.9
9	Open, Rule-Based Trading System	13	23.1	7.7	53.8	0.0	15.4
10	Science, Technology and Innovation	17	47.1	5.9	29.4	11.8	5.9
	All Task Forces	292	21.9	4.5	33.9	12.7	27.1

NGO = nongovernment organization.

Note: Figures do not include the chairpersons (often two).

Source: MDGs 2005.

as Ernesto Zedillo, former President of Mexico and Chair of the Trade Task Force. This organization helped make trade matters fairly well represented in the final MDG outcome.

The Trade Task Force exhibits two special features in terms of inputs. First, it is the smallest one due to its well-circumscribed mandate. Second, its composition differs in several respects from the average task force: the absence of representatives of national authorities, a larger

participation from international institutions, a better representation of business interests, and a smaller representation of NGOs.

These differences deserve some explanation. The absence of national authorities is by far the starkest difference with the SDGs, which have been driven by government representatives at the UN. This was because selecting a few countries would have run the risk of appearing to play favorites; and there was always the possibility of consulting the countries' ambassadors to the WTO through regular contacts and meetings in Geneva. The large participation of international institutions was meant to accommodate all these main actors involved in the multilateral trade system in order to ensure that they will feel reasonably committed to support the implementation of the MDG recommendations until 2015. The only slightly better representation of the business community mirrored its ongoing erosion of interest in the multilateral trade system. Finally, the NGOs' smaller representation reflected most of them having taken positions on trade issues in the early 2000s, not so much because of their interests, but largely as a corollary of their positions and, as said above, as a free ride on the media attention generated by the WTO Ministerials during this period. The MDGs' preparation process offered them an organizational structure that was much more appropriate to their core issues.

### **2.3.2 The SDG Preparatory Phase**

In sharp contrast with the MDGs, the SDG preparatory phase has been largely an intergovernmental process held at the UN and under its rules (Lunn, Downing, and Booth 2015), hence the impossibility of drafting a table equivalent to Table 2.1 for the MDGs. The year 2012 witnessed the birth of the three key SDG bodies: in January, the UN Task Team made up of more than 60 UN agencies and international institutions; in June, the Rio+20 Summit mandated the creation of an Open Working Group (OWG) to come up with a draft agenda; and in July, a high-level panel co-chaired by President Ellen Johnson Sirleaf (Liberia), President Susilo Bambang Yudhoyono (Indonesia), and Prime Minister David Cameron (United Kingdom) was established. The OWG had representatives from roughly 70 countries, mostly drawn from the members' missions to the UN. The wide range of SDG issues and the narrowness of the pool of official representatives made it very difficult for most countries to align the needed expertise—a point that emerged as a deep source of difficulties when defining the indicators. Alongside the OWG, the UN conducted 12 international thematic consultations (groups until 2015 and networks since 2016, for instance on social inclusion, health, sustainable cities, etc.), and national

consultations with 83 UN members, with the results being fed into the OWG discussions. The final OWG draft was presented to the UN General Assembly, which endorsed it in September 2014, opening the phase of negotiations among the members. The final document stating 17 goals and 169 associated targets was agreed upon in September 2015. However, negotiations on the 229 indicators continued until March 2016 (Sachs, Schmidt-Traub, and Durand-Delacre 2016).

Clearly, this procedure was not able to harness the trade potential in promoting development and governance—the two ultimate SDG objectives. Moreover, the lack of written reports on the issues covered introduced a bias favoring fragmented views to the detriment of a more comprehensive and consistent approach. Such fragmentation concerned all the topics—very often, reading the SDGs gives the impression of looking at unconnected silos—but it was particularly detrimental to topics that seemed “peripheral” to many SDG drafters, such as trade.

### **2.3.3 A Missed Opportunity: The MDG 8 Gap Reports**

Despite the differences of approach between the MDGs and SDGs, one instrument could have established a useful link between them: the annual MDG 8 Gap Reports. In May 2007, the UN Secretary General established an MDG Gap task force integrating more than 30 UN and international agencies to monitor the implementation of the MDG 8 Goal, “Developing a global partnership for development.” The Gap Reports covered not only trade issues, but also official development assistance, debt relief, access to medicines and new technologies (especially information and communication)—all prominent and highly charged topics. However, their impact in trade matters has been minimal, as they were unable to convey to the SDG participants that trade policy could be a development and governance tool, even in the political and economic environment of the 2010s.

This failure does not flow from a meager coverage of trade by the successive Gap Reports (a possibility since trade had to compete with several other issues, as stressed above). Block A of Table 2.2 shows that trade received its “fair” share of words in the Gap Reports, which were organized in three components: the executive summaries, the recommendations included therein, and the detailed texts. The executive summaries contain a large share of the words devoted to trade issues, except for the 2014 report, which is a clear result of the meager results of the Bali Ministerial. The recommendations show signs of a more marked decline in trade visibility in the 2013 and 2014 Gap Reports (the 2015 report has no recommendation for any issue covered by the MDG 8). Finally, the full texts of the Gap Reports show again a relative stability

in terms of words, except in 2015. In short, a word count suggests some signs of erosion in trade visibility, but nothing systematic or dramatic.

However, this observation could simply reflect an institutional constraint, namely the obligation to give equal weight to the various issues to be monitored by the Gap Reports. There is thus a need for content-based analysis, presented in Block B of Table 2.2. This analysis suggests a much less benign conclusion: the Gap Reports have become an increasing formality leading to a progressive fossilization of the trade issues in the MDG and, hence, UN context, facilitating their marginalization in the SDG context.

Block B of Table 2.2 shows that the report recommendations have increasingly focused on the Doha Round: the share devoted to

**Table 2.2 MDG 8 Gap Report: “Revealed” Preferences**

	2011	2012	2013	2014	2015
<b>Share of words devoted to trade issues in the MDG 8 Gap Reports</b>					
Executive summaries					
Texts	15.6	14.7	16.4	11.1	16.5
Recommendations	26.6	24.2	14.8	17.9	-
Whole reports (excluding executive summaries)	18.9	20.7	19.7	20.7	15.1
<b>Breakdown of recommendations on trade issues by issue</b>					
Doha Round	47.4	47.4	79.1	84.7	-
Completion	7.7	19.5	27.9	23.6	-
DFQF	25.5	14.3	-	-	-
Agriculture	14.3	13.5	51.2	19.4	-
Bali package	-	-	-	41.7	-
Trade capacity	18.4	21.8	-	15.3	-
Trade finance	16.3	0.0	-	-	-
New trade restrictions	17.9	17.3	-	-	-
Green economies	-	13.5	-	-	-
Supply issues	-	-	20.9	-	-
<b>Total number of words</b>	<b>196</b>	<b>133</b>	<b>43</b>	<b>72</b>	<b>-</b>

- = data not applicable, DFQF = duty free quota free.

Notes: A reasoned assessment of the word count should consider that WTO Ministerial Conferences occurred in December 2011 (Geneva), 2013 (Bali), and 2015 (Nairobi). As the Gap Reports were published in September, the 2011, 2013, and 2015 reports were written and released before the Ministerials, while the 2012 and 2014 reports were written after the Ministerials.

Source: MDG 8 Gap Reports.

the multilateral trade negotiations increased from 47% to 85% (of increasingly shorter texts, to be fair). This evolution occurred precisely at a time when it was becoming increasingly clear that the Doha negotiations were going nowhere, whereas trade was being reshaped by powerful structural changes (such as global value chains) and policies of the major trading powers were shifting from multilateral to de facto bilateral negotiations. In other words, the Gap Reports were increasingly out of touch with international trade realities.

One could argue that such a narrow focus of the Gap Reports on the Doha Round was reflecting the MDG Trade Task Force report. But, the task force report has clearly focused on the Doha Round because it was written between the Ministerial Conferences in Cancun and Hong Kong, China. At this time, it seemed reasonable to focus on WTO issues, and not to miss what could have been an historic opportunity. By contrast, the successive Gap Reports kept focusing on the WTO after the June 2008 Geneva failure to reach an agreement and after the US “pivot to East Asia” (Trans-Pacific Partnership) in September 2008. They made no attempt to mention new ways of improving market access among developing countries, such as the Pacifico Arco. This “routine” approach could only lead to a progressive fossilization of trade issues in the MDG context and their marginalization in the SDGs.

From this perspective, it is important to note that, by contrast, the MDG Trade Task Force report was very careful to insist on key elements going much beyond the Doha negotiations. These elements could have been used as a basis by the Gap Reports for stressing the continued relevance of trade policy for development. Three illustrations follow.

First, the MDG Trade Task Force report insists on the capacity to export depending largely on efficient domestic production processes, hence on the ease with which domestic firms can get good quality and affordable imported inputs, a key dimension of global value chains. The various Gap Reports never stressed imports; on the contrary, they kept repeating the need to open the markets of the developed countries—hence adding no value to the (nonperforming) rhetoric prevailing in Geneva. The only exception was the 2013 Gap Report, which alluded in a cryptic way to the “supply issues” in developing countries and least developed countries (see Block B, Table 2.2 last line).

Second, the Gap Reports have made no attempt to reflect the progressively emerging understanding of the possible complementarities between the WTO and economically sound Preferential Trade Agreements. These complementarities have many facets, the most important of which is that the WTO forum is not well suited to address trade-related regulatory issues. Defining norms for products and/or production processes, shaping regulations for getting efficient markets

in services, and drafting innovative agreements on public procurements or on state-owned enterprises are tasks largely out of reach for the WTO in the short to medium term because they require a level of trust among the partners that does not exist among all its members. Such a trust can only be achieved by introducing trade negotiations—or rather in “trade-related conversations”—on these topics to the appropriate domestic regulators in charge of defining and monitoring the corresponding norms and regulations in the various countries. Underlining this tectonic shift of modern trade policy from negotiators to regulators could have attracted the interests from those SDG drafters who were interested in domestic governance.

Finally, the MDG Trade Task Force report has made some effort to show how trade policies could support other MDGs. Arguably, these developments were limited to the trade impact on poverty and to a few environmental issues, such as agriculture and fisheries, and the corresponding texts were often relatively short. However, these limits also reflected a balance still hard to achieve in the early 2000s between the need to make a case for the Doha Round from the development perspective, and the still-adversarial relations between the trade and other crucial communities (such as for climate change or for water) involved in the MDGs. These relations became much better in the second half of the 2000s. However, the Gap Reports did not make any attempt to reflect these increasingly fruitful debates, for instance, between the trade, climate, and water communities, except with a somewhat awkward recommendation on “greening” the developing economies in the 2013 report.

To sum up, if the Gap Reports did not reveal any strong sign of erosion of trade visibility, their inability to de-link trade issues at large from the narrow and increasingly hopeless Doha negotiations has been a missed opportunity to keep trade policy as an attractive topic in the SDG context.

## **2.4 MDG and SDG Outputs: Targets and Indicators**

This section presents the main outputs—goals, targets, and indicators—of the two endeavors, and underlines the difference of scale between them, the SDGs being 8 to 12 times “bigger” than the MDGs. It also assesses some SDG targets, and looks in more detail on trade indicators.

### **2.4.1 MDG Output**

Table 2.3 lists the goals, core targets, and indicators for defining MDG achievement. The insistence on indicators reflects the strong preference

for “metrics” in the MDGs—as indeed in the SDGs. Table 2.3 suggests a reasonable output for a worldwide endeavor such as the MDGs: eight goals, 21 targets expressed in fewer than 400 words, and 60 indicators.

The output of the MDG Trade Task Force deserves two specific remarks. First, the Trade Task Force does not have its “own” specific goal(s), contrary to some others. Trade was included in two targets that were part of Goal 8 on “Developing a global partnership for

**Table 2.3 The MDG Production Process: Outputs**

	Task Forces' Topics	Goals		Targets		Number of Indicators
		How Many?	Number of the Goal	How Many?	Number of Words	
1	Poverty and Economic Development	1	1	2	34	7
2	Hunger			1	13	2
3	Education and Gender Equality	2	2, 3	2	42	6
4	Child and Maternal Health	2	4, 5	3	31	9
5A	Access to Essential Medicines	1	8	1	14	1
5B	HIV/AIDS			2	27	5
5C	Malaria	1	6			
5D	Tuberculosis			1	16	5
6	Environmental Sustainability			2	32	7
7	Water and Sanitation	1	7	1	17	2
8	Improving the Lives of Slum Dwellers			1	18	1
9	Open, Rule-Based Trading System			2	73	4
10	Science, Technology and Innovation	1	8	1	17	3
	Goal not Task Force-Specific	1	8	2	63	8
	All Task Forces	8	–	21	397	60

MDG = Millennium Development Goal.

Note: The goal of task forces 5A, 9, and 10 is the same as “MDG 8”.

Source: MDGs 2005.



development”, which covered task forces 5A, 9, and 10. Such a grouping was meant to reflect the MDGs’ development focus. However, it should be stressed that it was logical from a trade and trade policy perspective, as it underlines the crucial—but too often forgotten—point that trade and trade policy should not be conceived as a goal per se. If well used, they are powerful instruments that can deliver goals, such as growth and development, and improve lives. This view is clearly reflected in targets 8.A and 8.B:

*Target 8.A: Develop further an open, rule-based, predictable, non-discriminatory trading and financial system. Includes a commitment to good governance, development and poverty reduction—both nationally and internationally.*

*Target 8.B: Address the special needs of the least developed countries Includes: tariff and quota-free access for the least developed countries’ exports; enhanced programme of debt relief for heavily indebted poor countries (HIPC) and cancellation of official bilateral debt; and more generous ODA for countries committed to poverty reduction.*

It is particularly interesting to note that trade is linked to “good governance”—a term that appears nowhere else in the MDG target list, but that constitutes a pillar of the SDGs.

#### **2.4.2 SDG Output: Goals and Targets**

Table 2.4 summarizes the goals of the SDGs and the MDGs, and the number of words defining them, and shows that the SDGs had eight times as many targets as compared with the MDGs. It also shows how it took time to stabilize the number of SDG targets in particular. However, it should be noted that this difficulty was largely solved by merging two or more previously independent targets—hence the stability in the number of words in Table 2.4 between the 12th OWG and the final document. In addition, the change of scale between the MDGs and the SDGs is even bigger in terms of words—by a factor of 12. In international negotiations, the number of words can be interpreted in two ways: as a source of increased precision, or of “constructive ambiguity”, that is, a way for keeping each participant largely free to do whatever it wants beyond broad (often non-committing) principles. Reading the SDG targets suggests that the second alternative is more common, not such a surprising result in the UN or trade negotiation forum. Finally, the number of targets per goal and the number of words per target are significantly higher in the SDGs than in the MDGs. Such a feature can again be interpreted in two ways: an effort to be more precise, or a propensity to add different aspects with less of a sense of priorities. Reading the SDG targets suggests again the second alternative is more common.

**Table 2.4 The Proliferation of SDG Goals, Targets, and Words**

	Number of			Targets per Goal	Words per Target
	Goals	Targets	Words		
MDGs	8	21	374	2.6	17.8
SDGs					
High-Level Panel	–	54	889	–	16.5
11th OWG	–	139	2,360	–	17.0
12th OWG	–	212	4,389	–	20.7
Final	17	169	4,369	9.9	25.9

– = data not applicable, MDG = Millennium Development Goal, SDG = Sustainable Development Goal, OWG = open working group.

Sources: Table 2.1 for the MDGs and Copenhagen Consensus Center for the SDGs.

These observations raise questions: To what extent have the SDG targets been able to keep an economic dimension? Has the proliferation of goals, targets, and words been achieved by piling up too many quantitative elements? For instance, is the indicator 12.6.1 “*number of companies publishing sustainability reports*” useful and appropriate for monitoring the target 12.6 “*encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycles*”? Answering these questions goes beyond this paper and would require an in-depth analysis. However, key words suggest that basic economic terms rarely appear: for instance, the word “price” appears only twice in the targets and indicators (United Nations Economic and Social Council 2015). Similar observations could be made for trade, exports, and imports, with again the notable bias of exports preferred over imports, revealing a mercantilist approach not amenable to improving trade policies.

In this context, the analysis done by the Copenhagen Consensus Center (CCC), the only existing systematic review of the SDGs from a purely economic perspective, deserves some attention (Lomborg 2014). Table 2.5 summarizes its main conclusions. Columns 1 and 2 list the 17 goals and 169 targets associated with each goal. Column 3 presents the goals in which there are some references to trade (based on the words “trade,” “export,” and “import”) and trade policy (based on the words “tariff,” “quota,” and “subsidy”). Columns 4 through 9 summarize the CCC’s conclusions. Column 4 shows the distribution of the “reviewable” targets, that is, the targets for which the CCC has estimated to have enough knowledge and information to provide a reasoned economic

**Table 2.5 An Initial Economic Assessment of the SDGs’ “Reviewable” Targets**

Goal	Targets		Targets Reviewed by the CCC [b]		CCC’s Assessments				Number of Indicators
	Number	Refer to Trade [a]	Number	Ratio 4/1	Phenomenal	Good	Fair	Poor	
1	2	3	4	5	6	7	8	9	10
1	7		1	14.3			1		9
2	8	yes	3	37.5	1	1	1		15
3	13		8	61.5	3	4		1	25
4	10		4	40.0	1		2	1	11
5	9		1	11.1	1				14
6	8		1	12.5	1				10
7	5		3	60.0		2	1		6
8	11	yes	4	36.4	2		1	1	15
9	8		2	25.0	1		1		12
10	10		2	20.0		1		1	12
11	10		0	0.0					13
12	11		2	18.2		1	1		12
13	6		0	0.0					5
14	10		3	30.0	2	1			10
15	12		0	0.0					15
16	12		0	0.0					21
17	19	yes	4	21.1	1	1	1	1	24
All	169	3	38	22.5	13	11	9	5	229

CCC = Copenhagen Consensus Center.

Source: Copenhagen Consensus Center (2014).

assessment of those that do not contain internal inconsistencies. Only 38 of the targets have been considered reviewable. Column 5 shows that the distribution of these targets is very uneven among the various goals: at one end of the spectrum, a few goals have no reviewable target at all, while at the other end, two goals have listed targets two-thirds of which have been considered reviewable.

For the 38 reviewable targets, columns 6 to 9 show that the CCC cost-benefit analysis has led to four outcomes: “phenomenal” (robust evidence that benefits are 15 times higher than costs); “good” (robust evidence that benefits are 5 to 15 times higher than costs); “fair”

(robust evidence that benefits are 1 to 5 times higher than costs); and “poor” (robust evidence that benefits are smaller than costs, or that the target definition is inconsistent or provides wrong incentives).

The CCC review leads to two main conclusions. The first deals with all the targets reviewed, either trade-related or not. Two-thirds of the reviewable targets (24) benefit from a “phenomenal” or “good” assessment. Though this seems a very positive outcome, this impression should be seriously nuanced by 131 targets—77% of the total—not being able to be reviewed because of a lack of information or internal inconsistency. The second conclusion deals only with the targets that include one of six key words related to trade (“trade,” “export,” “import,” “tariff,” “quota,” and “subsidies”). All the targets containing one of these six words are among the 38 reviewable targets, and they have been rated as “phenomenal” or “good.” In this context, it is interesting to note that the CCC assessment on trade-related targets (Anderson 2014) has been careful enough to accommodate the most recent developments in trade policy, such as the “mega” preferential trade agreements that have been omitted by the Gap Reports.

### 2.4.3 SDG Outputs: Indicators in Trade Matters

Column 10 of Table 2.5 lists the current number of indicators associated with the targets (Leadership Council of the Sustainable Development Solutions Network 2015).<sup>1</sup> There are 229 indicators, roughly four times the number under the MDGs. There are wide differences among the targets, some of them having a much higher number of indicators than others. What follows focuses on the indicators under the Trade heading (Goals 17-10, 17-11, and 17-12). A rapid analysis reveals serious problems in the way these indicators are defined.

Goal 17-10 is a rewording of the MDG goal: “*promote a universal, rules-based, open, non-discriminatory and equitable multilateral trading system under the World Trade Organization, including through the conclusion of negotiations under its Doha Development Agenda.*” The associated indicator 17.10.1 reads as follows:

#### *17.10.1 Worldwide weighted tariff average.*

This indicator is hard to understand. Is it the average over all the goods for a given country, or the average over all the countries for a given good? Is this average trade-weighted or not? In any case, broad tariff averages are not useful because they “dilute” the limited number of high tariffs (tariff

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<sup>1</sup> This number may still be subject to change.

peaks)—those which really hurt domestic consumers, be they households or firms, and are welfare-deteriorating—in the number of small or zero tariffs imposed on most of the goods. They are particularly unhelpful when one focuses on least developed countries, which export a very limited range of goods.

Goal 17-11 requests to “*significantly increase the exports of developing countries, in particular with a view to doubling the least developed countries’ share of global exports by 2020.*” The associated indicator 17.11.1 reads as follows:

*17.11.1 Developing countries’ and least developed countries’ share of global exports.*

This goal raises also several questions. Why has “doubling” been preferred to any other predetermined figure? Even more important, how should such a result be assessed: is it the consequence of the proper functioning of the markets, or of some government policy (for instance, export subsidies)? Is it possible to disentangle the many economic forces and policies that could have led to such a result, with possibly none of them due to the developing countries or least developed countries?

Goal 17-12 requests to “*realize timely implementation of duty-free and quota-free market access on a lasting basis for all least developed countries, consistent with World Trade Organization decisions, including by ensuring that preferential rules of origin applicable to imports from least developed countries are transparent and simple, and contribute to facilitating market access.*” The associated indicator 17.12.1 reads as follows:

*17.12.1 Average tariffs faced by developing countries, least developed countries and Small Island Developing States.*

As in the case of Goal 17-11, defining such an indicator exclusively in terms of tariff averages does not provide robust enough information for monitoring this goal.

## 2.5 Concluding Remarks

The SDGs have missed the opportunity to harness trade as an instrument for achieving their ultimate target—a “better life.” The SDGs’ working framework did not allow them to be both bold and pragmatic

in trade matters for two main reasons: first, the Gap Reports have been uninspired and cantoned themselves in the increasingly sterile WTO negotiations. As a result, they were unable to inform the UN about the new aspects of the trade debate that could be of great interest for the SDG participants. The second reason is that the Missions to the UN have been the main SDG negotiating bodies. Unfortunately, staff members of the UN Missions rarely have an intimate knowledge of how to handle trade, and the limited funds for the SDGs have prevented many countries from bringing trade experts from their capital cities.

This is a great loss because trade and the SDGs have a common regulatory agenda. What the trade aspect could bring to the SDGs is the realization of how a well-designed trade policy can improve domestic regulations. To some extent, this theme has emerged during the MDGs: for instance, the MDG report on Trade for Growth has stressed how eliminating water subsidies for farm production would improve water management and reduce agricultural trade distortions.

What happened during the last decade is the realization that such mutual benefits between better domestic regulations and better trade policies exist in almost every economic sector. Modern economies are split between two economic drivers: the desire for harmonization associated with scale economies and the endless appetite for diversity in goods and services fueled by economies of scope. So far, the first force has been the most powerful—hence the massive efforts until the late 1990s to harmonize norms in goods (harmonization has impacted very few services where diversity has always been prevalent). But the huge technological progress of the last 20 years enables an endless diversity in goods and services at increasingly lower costs—turning harmonization into a costly constraint. One of the best illustrations of these changes is provided by the EU “five decades” harmonization approach in the automotive sector. It has recently faced a remarkable debate, with Daimler (interestingly backed by Greenpeace) refusing to enforce a new, less polluting car coolant because it was found to be more flammable.<sup>2</sup> In other words, this case illustrates the increasing difficulties to define a norm that is unambiguously better than any alternative from all the conceivable criteria (pollution vs. safety in the Daimler case).

The second case is the “Volkswagen (VW) case” of playing with the norms—in fact, most EU carmakers have behaved as VW has. To dictate norms is worthless if they are not implemented and monitored. The VW case is a powerful illustration of how useful a trade partner

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<sup>2</sup> Interestingly, it is reported that the new coolant is produced by only two firms (Honeywell and Chemours), a non-competitive situation opening the way to high prices (Hakim 2016).

can be for ensuring compliance. It must be stressed that the case did not emerge because of some protectionist intent to hurt VW. On the contrary, the first tests were done in California by an engineer eager to assess the quality of German cars. When the engineer discovered what was going on, he turned to the California authorities, which sent the issue to the US federal authorities after having confirmed the engineer's results.

The lesson to be drawn from the Daimler and VW cases is simple: designing, enforcing, certifying, and monitoring “better” norms is a very difficult task and would greatly benefit from international “conversations” among the concerned regulating agencies.

This key lesson is embodied in the concept of “mutual equivalence,” which is a much better approach than harmonization, or mutual recognition, a weaker form of it (Messerlin 2011, 2015; Morall III 2011).<sup>3</sup> Under mutual equivalence, two countries debate whether their norms or regulations are “different, but equivalent.” Their decisions are prepared by a joint evaluation made by the partners’ relevant regulatory bodies—not the trade negotiators—of their existing norms for a given good or of their regulations for a given service. (This process of mutual evaluation can be made at the level of the definition of the norms or regulations, or at the corresponding certification processes, or at both levels.) This preliminary step of mutual evaluation is essential. Beyond its “technical” aspects, it is political to the extent that it creates the trust among the regulatory agencies—hence among the two countries—that is so badly needed when dealing with issues as complex and subtle as norms or regulations. If, and only if, mutual equivalence is granted after a satisfactory mutual evaluation process, producers can produce the good or service in question under the regulations of their own country and/or to sell it to the consumers of the other country without any other formality.

Mutual equivalence is the only way to get a deeper and more beneficial integration of two economies because it does not generate the costs that harmonization imposes. It has two additional benefits that should not be underestimated. First, it is a careful process that requires time and thus fits well the concept of bilateral trade agreements as “living” agreements. An “ambitious” agreement concluded “quickly” is an oxymoron in 21st century economies, as it defies the complex economic and regulatory realities—hence, it is doomed to generate anxiety among the public opinion and ultimately to be self-defeating. Second, mutual

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<sup>3</sup> At a first glance, mutual equivalence seems a new and untested idea. It is not. The EU 2006 Services Directive is based on this principle, as stated in Article 15.

equivalence provides a robust solution to the widespread fear of trade agreements generating a “race to the bottom” in regulatory matters. If a country decides to change its regulation for some reason, under mutual equivalence, the partner could, if needed, evaluate this new regulation. If it does not find the new regulation equivalent, then it can suspend the existing agreement, possibly conditional on some measures being taken by its partner. In such a context, no regulator has an interest to a race to the bottom. The only true option is a race to the top.



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# 3

## Trade and the Post-2015 Development Agenda

*Bernard Hoekman*

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### 3.1 Introduction

Sustaining real per capita income growth rates that exceed population growth by a substantial margin is necessary for achieving the post-2015 development agenda. Cultivating incentives to invest in tradable activities is a key factor determining an economy's growth potential and performance. Trade and foreign direct investment (FDI) are sources of technology and knowledge, as well as mechanisms whereby firms can specialize in activities in which they have a comparative advantage. The experience of many countries demonstrates how effective global integration can be as a core element of economic development. But numerous countries that have pursued trade liberalization have not been able to leverage it for development. Many complementary factors need to be in place, chiefly those pertaining to macroeconomic policies and the investment climate confronting businesses.

In the coming decade, the challenge of using trade as an instrument for sustainable development may well be greater than it was in the past. Since 2010, following the sharp collapse in trade in 2008 and the equally sharp recovery in 2009, global trade has grown in line with global output, as opposed to increasing 2 to 3 times faster than output in the 1980s, 1990s, and much of the 2000s. The period from the late 1980s to the 2008 global financial crisis was unique. Unprecedentedly high global trade growth rates reflected a mix of technological change and business innovation, policy reforms around the globe, and the reintegration of the People's Republic of China (PRC) into the world economy. Demand by the PRC for natural resources benefited many countries in Africa and Latin America, but at the same time rapid growth in the PRC's manufactured exports was a competitive pressure. Growth in the PRC increased the economic footprint of East Asia, leading to further dominance of the three regional "factories"/major markets in the world economy (North America, Europe, and Asia). Whether the post-2010

trade slowdown constitutes a “new normal” is a hotly debated question (Hoekman 2015). The answer matters for the role that trade can play in the post-2015 development agenda.

This chapter discusses how trade can help achieve the post-2015 development agenda. It starts in section 3.2 with some reflections on recent global trade-growth trends, followed in section 3.3 with a discussion of why and how trade is important for poverty reduction and the achievement of the 2030 Sustainable Development Goals (SDGs). Section 3.4 puts forward several suggestions regarding what could be done by governments to leverage trade opportunities for development and how the international community can assist, both through cooperation in trade policy broadly defined and through aid for trade. Section 3.5 concludes.

## 3.2 Growth, Trade, and Trade Policy

Trade has been a driver of growth in most countries that have been able to greatly increase per capita incomes and reduce poverty. Countries in East Asia have been the star performers, with an increase in per capita incomes of some 700% since the early 1980s, followed by South Asian countries (220%) (Table 3.1). Asia includes the PRC and India,

**Table 3.1 Average Annual Growth Rate of per Capita GDP  
(constant 2005 \$) [update to 2014]**

	1975– 1985	1985– 1995	1995– 2000	2000– 2005	2005– 2012	%Δ 1982– 2012	\$ 2012
Developing Regions							
East Asia and the Pacific	7.0	9.1	6.5	9.4	9.9	698	2,856
Europe/Central Asia	NA	-1.5	3.1	6.5	3.4	70	4,727
Latin America	2.7	-0.6	1.9	1.4	2.8	39	5,642
Middle East/North Africa	1.4	-0.3	3.3	2.8	NA	44	2,381
Sub-Saharan Africa	-2.0	-1.6	0.8	3.2	2.5	12	989
South Asia	2.5	3.8	4.6	5.8	6.4	223	1,009
LDCs	NA	0.4	2.8	4.7	4.2	60	518
Small States	NA	1.2	3.2	4.4	1.9	60	4,468
High Income	3.0	2.6	3.3	2.1	0.8	74	31,373
World	1.9	1.5	2.5	2.0	1.3	55	7,732

GDP = gross domestic product, LDC = least developed country, NA = not available.

Source: World Bank. World Development Indicators database.

the two most populous nations in the world, as well as several other countries with both large populations and many poor households (e.g., Bangladesh, Indonesia, Pakistan, the Philippines, and Viet Nam). High per capita growth in Asia has therefore implied a substantial reduction in the number of households with incomes below the poverty line.

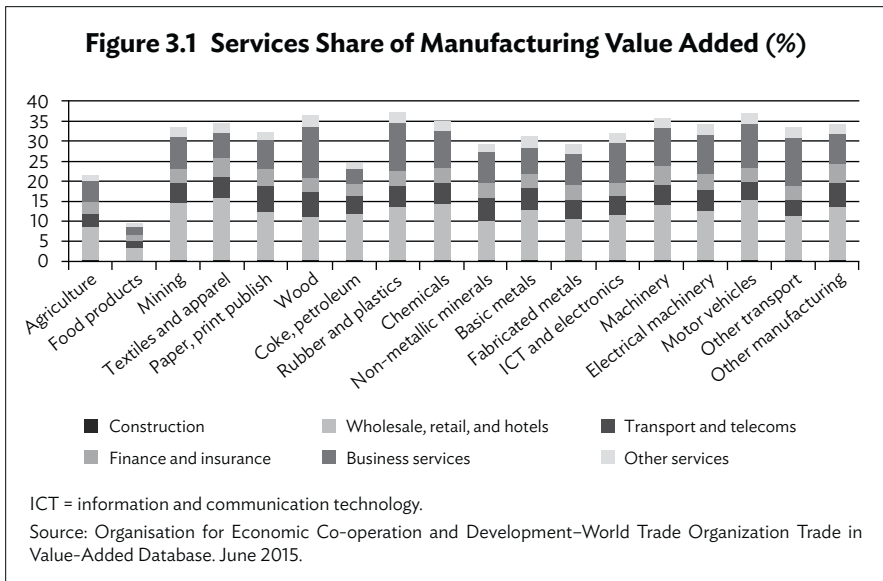
Trade played an important role in driving the recent decades' global growth. Between 1950 and 2008, the year the global financial crisis erupted, global trade increased 27-fold, that is, three times more than the growth in global gross domestic product (GDP). The total value of world trade in goods and services was over \$22 trillion in 2014. The trade-to-GDP ratio for the world stood at 60% in 2014, up from some 25% in the 1960s. The rise in incomes that has been observed in many parts of the world illustrates the payoff to trade openness and economic policies that encourage investment in production of tradable goods and services.

The boom in global trade reflected many factors, with two standing out: innovation and economic policy reform. The well-known technological changes that have underpinned global trade growth include advances in information and communication technology, which led to a sharp drop in the costs of international telecommunications, as well as new products and services that reduce the effect of distance and geography and permit the production of many products in global value chains (GVCs).<sup>1</sup> Small and medium-sized enterprises today have greater opportunities to sell and source internationally, in part by connecting to the international production network and to buyers and suppliers through internet-based platforms that also provide payment services. Technological change and innovation has led to significant leveling of the international playing field for small companies relative to large multinationals.

Another key driver of trade growth was the shift to outward-oriented strategies in many developing countries and former centrally planned economies in Europe and Asia. The world went from a situation with tariffs in the 20%–30% range and frequent use of quantitative restrictions and foreign currency and exchange controls to one where exchange rates are much more flexible, capital controls and quantitative restrictions were largely removed, and the average uniform tariff equivalent for merchandise trade is in the 5%–10% range (Kee, Nicita,

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<sup>1</sup> The shift to GVC-based production was a major factor leading global trade to grow much faster than aggregate output, that is, GDP. Trade flows are recorded on a gross value basis, including the value of the intermediate inputs that are embodied in a product. Thus, an input that is shipped from country A to country B as part of a GVC is measured as an export from A to B; the value of the subsequent export of the processed product from B to C (or back to A) will embody the value of the imported input. From a value-added perspective, this implies there is double counting. GDP, in contrast, is a value-added concept: it is the sum of all value added that is produced in an economy, including only net exports (exports minus imports).

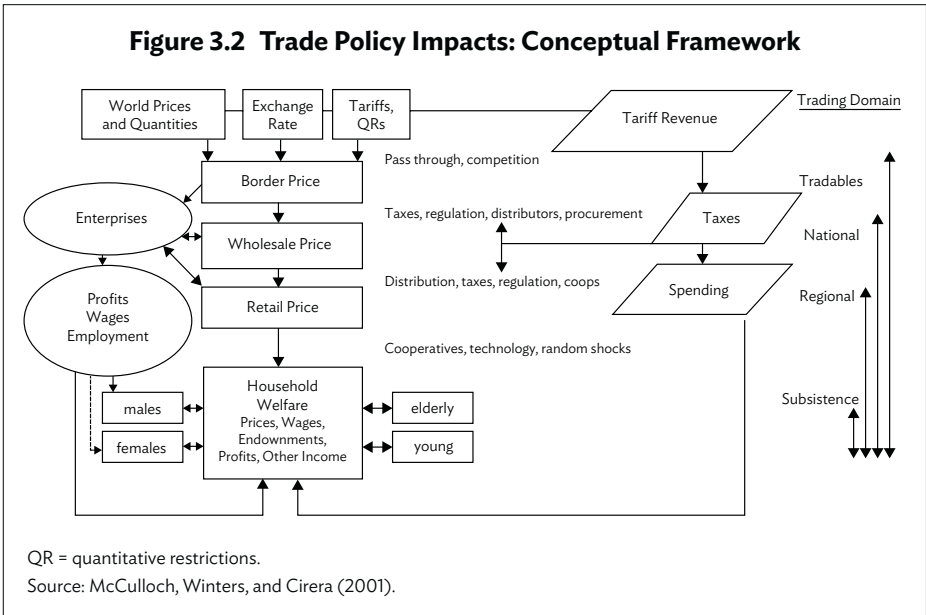


and Olarreaga 2009).<sup>2</sup> Effective (applied) tariffs for firms are often zero due to preferential trade agreements or duty-free, quota-free (DFQF) programs in the case of the least developed countries (LDCs).

Growth in the incomes of the poor is strongly related to overall growth in the economy, although the precise relationship will vary across countries depending on government policies and social and economic conditions. Given that openness to trade promotes growth, which is linked with poverty reduction, trade policy has an important role to play in economic development. A country's trade policy is the interface between the world market for goods, services and knowledge, and the national economy. The prices of products that prevail on world markets are critical indexes for firms to determine whether they can be competitive in a given sector. An open trade and investment regime helps investors to identify activities in which a country has a comparative advantage. This applies to services as much as it does to goods. As services account for a large share of manufacturing value added (Figure 3.1), the competitiveness of firms depends on their ability to source intermediate inputs and components from the most efficient suppliers and to use the most appropriate available technologies to produce goods and services (Miroudot and Shepherd 2016).

<sup>2</sup> Michalopoulos and Ng (2013) calculated for a sample of 50 developing countries that the simple average tariff in the late 2000s was 9.1%.

**Figure 3.2 Trade Policy Impacts: Conceptual Framework**



Trade policy affects the welfare (real income) of households by impacting the prices of the goods and services they buy and those that they produce, either directly (such as agricultural products) or indirectly, by working in a given sector. Figure 3.2 provides an overview of the channels through which trade policy impacts firms and households. Household welfare depends on the retail prices of goods consumed, which are determined by wholesale prices, which in their turn are determined by how the world price is affected by the exchange rate, trade policy instruments such as tariffs, the costs associated with customs controls, and corruption or delays in transporting consignments.

For firms, the effects of trade policy depend on the balance between impacts on the costs of inputs and the extent to which their products benefit from import protection. If tariffs increase the price of key inputs, this will negatively affect a firm, reducing profits and wages and/or employment. If the trade policy increases the price of the enterprise’s output, it may have the opposite effect vis-à-vis domestic sales. In practice, the net effect is generally an empirical question. Particularly important from a dynamic (growth) perspective is that a liberal trade policy may enhance economies by encouraging diversification and expansion along the extensive margin of trade.

From the perspective of the household, what matters are the effects of trade-policy-induced changes in relative prices of goods on

wages in affected domestic industries. In addition, trade taxes will generate revenue that can be used to provide transfers to households, e.g., cash transfer programs, or public services such as health and education.<sup>3</sup> The net effect of trade policy on households therefore is a function of the impacts on the cost of their consumption bundles, wages, and net transfers received. Given large rates of unemployment and underemployment in many low-income countries, actions to reduce trade protection can also generate new employment opportunities in export-oriented activities and in ancillary services for which demand will rise as export production and incomes rise.

Trade policy will have differential effects on households and enterprises depending on whether firms and workers are engaged in production for export, are focused on the domestic market and produce goods that confront competition from imports, or are engaged in non-tradable activities. Trade policy is generally not pro-poor, reflecting poor households having less political power. How trade policy impacts development also depends upon the pass-through of price changes. Retail prices not affected by trade policy (changes) because of market power in transport or distribution services, or because households are poorly connected to markets, may not be very responsive to changes in border prices. If, for example, road transport is not a competitive sector, trucking companies may not pass on the reduction in prices that comes with a reduction in import tariffs. Similarly, if firms confront very high costs because of poor infrastructure or corruption and red tape, the supply responses to trade policy may be weak. These considerations illustrate the importance of complementary policies, in particular, a focus on lowering trade costs.

Trade is not an elixir for development—it is simply one mechanism for raising incomes over time. Greater openness to trade may not raise average incomes if other policies are not supportive of investment and entrepreneurship. Extensive empirical analysis has found that export surges in developing countries tend to be preceded by a large real depreciation, which leaves the exchange rate significantly undervalued. Ensuring that the real exchange rate does not become overvalued, and establishing a macro environment that lowers exchange rate volatility is important (e.g., Schatz and Tarr 2002; Eichengreen 2008; Rodrik 2008; and Freund and Pierola 2012). Countries with weak and unsupportive business environments and high levels of corruption may benefit little from trade liberalization (Freund and Bolaky 2008). A variety of supporting policies and institutions are needed to encourage investment

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<sup>3</sup> Nontariff trade policies will not generate revenue, but may create rents that are captured by specific groups.



into internationally competitive sectors and the most productive firms, as well as to permit resources to be diverted from less productive companies.

Equally important is that firms and households have access to a variety of public and private services, most notably connectivity and related infrastructure, health and education, and finance. Many services play an important “intermediation” function, supporting the specialization associated with economic development. Financial, logistics, and professional services are critical production inputs. Services also play a major role in the operation of GVCs, with the productivity of services firms impacting their clients’ export performance (e.g., Francois and Hoekman 2010; Hoekman and Shepherd 2015a). Consistent with the findings of Freund and Bolaky (2008) regarding the effects of merchandise trade reforms, Beverelli, Fiorini, and Hoekman (2017) found that the effects of services trade restrictions are mediated by the quality of domestic economic governance. A services trade policy reform implemented by two different countries may have very different impacts on the performance of downstream sectors depending on the quality of governance that prevails.<sup>4</sup> This is another example illustrating that complementary policies play a critical role in determining the extent to which an economy will benefit from open trade.

### **3.2.1 Global Value Chains and the Post-2008 Trade Growth Slowdown**

Supply chain-based trade involving manufactured products has been a key feature of East Asia’s growth, and has been much less prevalent in other regions. Indeed, countries in regions with the worst per capita income growth performance are often either not participating in GVCs or are natural resource exporters.<sup>5</sup> Rising real wages and rebalancing of the PRC’s economy toward domestic consumption in conjunction with efforts to lower domestic trade costs may provide greater incentives for investors in the future to (re-)locate activities in regions that to date have been off the GVC map, most notably Africa. Although the ratio of trade to GDP of African economies is often above 60%, exports tend to be dominated by natural resources and agricultural products. To date, most of Africa has not seen the shift toward intra-industry trade, vertical specialization, and participation in international supply chains that has

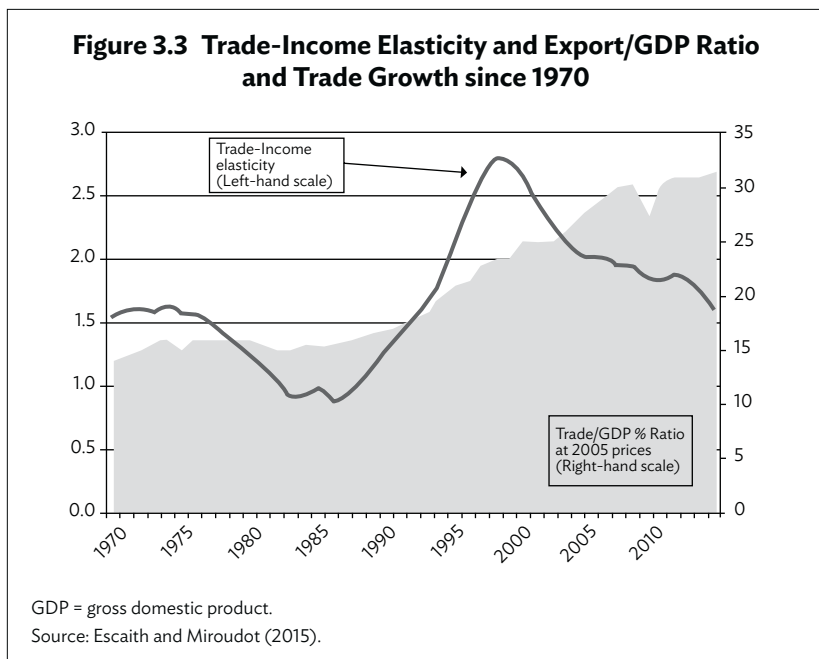
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<sup>4</sup> The Beverelli, Fiorini, and Hoekman (2017) finding does not capture differences in level of economic development as they control for the level of per capita income.

<sup>5</sup> South Asia is an exception to this pattern, reflecting the large internal market and high barriers to trade that are to a significant extent the result of deliberate economic policies. But even South Asia is much more engaged in GVCs than are most countries in Africa and Latin America.

been a driver of trade growth in East Asia, Mexico, Turkey, and Central and Eastern Europe. Moreover, intraregional trade is limited—less than 10% of the total, as measured by official trade statistics (see World Bank 2012), although informal trade within Africa is significant, so the actual figure is likely higher (Pesce, Karingi, and Gebretensaye 2015). However, this mostly comprises low-value items and trade in foodstuffs. While important from a welfare perspective—this type of trade generates revenue for the small traders involved (who are often women)—it does not constitute the type of specialization and GVC trade that has supported high per capita income growth in East Asia.

An important question is whether trade integration continues to offer prospects to drive the type of dynamic effects it had in East Asia. Starting in the early 2000s, the rate of global trade growth slowed relative to income growth (Figure 3.3). Post-2008, trade growth has been particularly anemic—in line with the very weak GDP growth performance—and it has not driven either industrialized or emerging economies. Understanding why this is the case and, more specifically, whether it portends a decline in the potential for growth is important for countries seeking to use trade for development. The decline in the income elasticity of trade observed in Figure 3.3 in part reflects the reintegration of the PRC, and, to a lesser



extent, the countries of Central and Eastern Europe, being a transitional phenomenon. Once the adjustments associated with what was to a large extent a move from autarky had occurred, trade inevitably grew much more in line with income.

A more fundamental reason for declining post-2008 trade growth may be diminishing returns from the use of “GVC technology.” The more international production is fragmented across countries, the greater the associated gross trade flows relative to total value added. Insofar as at some point businesses achieve what they perceive as the optimal use of GVCs, the growth of trade associated with this process will slow and increase more in line with total output (value added) produced. Indeed, insofar as the decline in the output-trade elasticity is due to supply chain managers deciding that it is more profitable to shorten supply chains or to “reshore” production, the result will be a fall in recorded gross trade flows and a smaller difference between the gross value of trade and trade in value added. Supply chain specialists predict that in the coming years there will be a move away from highly fragmented, globe-spanning supply chains toward a greater reliance on regional production networks (Srinivasan et al. 2014; Stank et al. 2014). Greater use of technologies such as 3D printing (“additive manufacturing”) and robots/automation of tasks would have similar effects.

There are several reasons to believe that trade has not peaked and can grow faster than income in the coming decades, thus driving the ratio of global trade (exports plus imports) to GDP beyond the current level (around 60%). One reason for optimism is that ongoing and future technological change may enhance the ability of small firms to engage in international trade. The internet, digitization, more efficient logistics, e-payment systems, translation software, and so on are all potential drivers of the internationalization of small and medium-sized enterprises. Another potential driver is rapid growth in trade in services. Services are much more tradable than is generally thought (Gervais and Jensen 2013), but are often subject to restrictive policies (see below). Traditional barriers to trade in goods and restrictions on inward FDI continue to be much higher in emerging and developing economies than in Organisation for Economic Co-operation and Development (OECD) nations. There is great potential for further trade growth, especially in developing country regions with high barriers to trade, if these can be lowered. Regional integration is an important mechanism that can be used to do so. Indeed, from the perspective of what trade can do to help achieve sustainable development, regional integration and cooperation is a key priority.

### 3.3 Trade and Sustainable Development

As already mentioned, the most important channel through which trade and investment policy can support development is increasing economic growth. This is also true for the 2030 Agenda for Sustainable Development and the associated SDGs that were adopted by all United Nations (UN) members (United Nations 2015a; b).<sup>6</sup> Thus, economic growth, which is itself an SDG (Goal 8: Decent Work and Economic Growth), is important for ending poverty (SDG 1). More generally, the additional resources generated through growth are necessary to make the investments required to attain the various goals. This indirect channel linking trade to the SDGs is complemented by other, more direct channels. Thus, trade reform can help reduce poverty if governments focus explicitly on reducing any anti-poor biases that are implied by prevailing trade policies—e.g., abolish higher tariffs on products that are important in the consumption basket of poor households (Nicita, Olarreaga, and Porto 2015). Food security and the prospects of achieving the goal of eliminating hunger may be enhanced by removing agricultural exporters' trade restrictions (Martin and Anderson 2012). Access to energy may be enhanced by eliminating restrictions on trade in electricity and energy products (Florini and Sovacool 2012). Connecting smallholder farmers to GVCs can have significant positive impacts on health and nutrition (Swinnen 2014) and reducing food losses and wastage (FAO and World Bank 2011). Aid for trade that targets regional infrastructure spanning two or more countries may have a high payoff in improving connectivity for informal day traders as well as firms in the formal sector (Brenton, Portugal-Perez, and Regolo 2014).

Trade policy and trade-related measures are referenced in several SDGs and targets, as follows:

- **Goal 2** (*Zero Hunger*) includes a call to correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect.
- **Goal 8** (*Decent Work and Economic Growth*) calls on improving Aid for Trade support for developing countries, especially for LDCs, including through the Enhanced Integrated Framework for trade-related technical assistance.

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<sup>6</sup> The Appendix lists all 17 of the agreed SDGs.

- **Goal 9** (*Industry, Innovation and Infrastructure*) notes the need for quality, reliable, sustainable, and resilient infrastructure, including regional and trans-border infrastructure and increasing the integration of small-scale industrial and other enterprises, in particular in developing countries, into value chains and markets.
- **Goal 10** (*Reduced Inequalities*) stresses the importance of special and differential treatment for developing countries, in accordance with World Trade Organization (WTO) agreements.
- **Goal 14** (*Life Below Water*) calls on disciplining (rich countries') fishery subsidies.
- **Goal 17** (*Partnerships for the Goals*) includes language on the importance of
  - a universal, rules-based, open, nondiscriminatory, and equitable multilateral trading system under the WTO, including through the conclusion of negotiations under its Doha Development Agenda (17.10);
  - significantly increasing developing countries' exports, including doubling the share of LDCs by 2020 (17.11);
  - timely implementation of DFQF market access on a lasting basis for all LDCs, consistent with WTO decisions, and ensuring that preferential rules of origin applicable to imports from LDCs are transparent and simple, and contribute to facilitating market access;
  - enhancing policy coherence for sustainable development (17.14); and
  - respecting each country's policy space and leadership to establish and implement policies for poverty eradication and sustainable development (17.15).

The focus in the SDGs is on improving market access for developing countries, including through WTO negotiations and DFQF treatment for exporters in LDCs, and ensuring that developing countries have “policy space”—matters that have long been on the international agenda. While development assistance, policy space, and preferential market access can contribute to sustainable development, they may not do much to expand trade. Although there are important exceptions, such as Bangladesh exports to the United States (US), LDCs already have DFQF access to many high-income markets. The US and the large emerging economies, such as the PRC and India, can and should do more to provide LDCs with DFQF access to their markets, but research has documented that the binding market access constraints tend to

take the form of nontariff measures (NTMs), including restrictive rules of origin.

The language on trade and trade policy in the various SDGs constitutes “business as usual”—the underlying approach that has been pursued in the UN and the General Agreement on Tariffs and Trade (GATT)/WTO context for decades. The only specific target, that is, to double the global share of LDC exports by 2020,<sup>7</sup> is already included in the Istanbul Programme of Action (United Nations 2011). There is a mercantilist flavor to how trade is included in the SDGs: the focus is on exports as opposed to trade (imports and exports), and the critical importance of addressing competitive weaknesses and improving governance and the business environment confronting firms in developing countries is underemphasized. What matters is to help firms deal with NTMs in the relevant markets, both at home and abroad.

Many of these NTMs affect services trade and investment. This is important for any consideration of trade and the post-2015 development agenda because the performance of services sectors will influence the extent to which many SDGs will be realized. Each of the 17 broad SDGs (see Appendix) is further articulated into a subset of more specific objectives, reflected in 169 targets.<sup>8</sup> Many of these targets map directly to (coincide with) the performance of specific services sectors (e.g., health services—SDG 3, education—SDG 4, etc.).

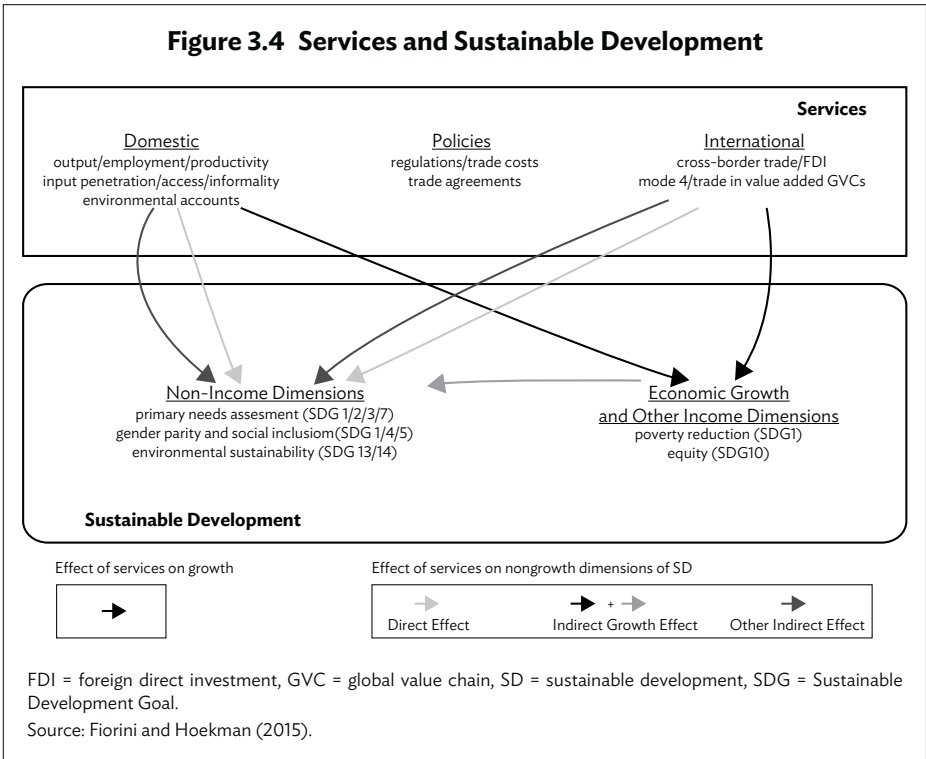
The links between services performance and the SDGs are illustrated in Figure 3.4. The upper box includes both domestically produced services and services provided through trade and investment. The cost and efficiency/productivity of both sources of services provision is impacted by policy. The effect of services performance on sustainable development outcomes is represented in the lower part of Figure 3.4. This distinguishes between two channels: (i) impacts of better services performance on economic growth—raising incomes increases both the scope to achieve income-related SDGs, such as reducing poverty and, indirectly, helps to realize other SDGs that require resource investments; and (ii) the direct impact of services performance on specific dimensions of the various SDGs.

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<sup>7</sup> It is not clear what the baseline year is or whether the target includes trade in services.

<sup>8</sup> Sustainable Development Knowledge Platform. Transforming our world: the 2030 Agenda for Sustainable Development. <https://sustainabledevelopment.un.org/post2015/transformingourworld> (accessed 30 January 2017).

**Figure 3.4 Services and Sustainable Development**



### 3.4 Leveraging Trade for Development

To “operationalize” trade as a means of achieving the SDGs, a first requirement is to identify what the binding constraints on trade growth are and then to design an agenda focused on attenuating them. Adopting (agreeing on) specific indicators that can act as focal points for action and be used to monitor progress over time in addressing the constraints will help in leveraging trade opportunities. Specific performance indicators are important to focus attention at both the national level (developing country governments) and the international level (development partners) on actions that will help firms in developing countries utilize trade opportunities. Given that the post-2015 development agenda centers to a significant extent on services, such indicators must span services trade performance measures as well as more traditional trade policy foci. To date, the

indicators that have been the focus of deliberation are too limited to serve this purpose.<sup>9</sup>

A common factor that inhibits use of the global trading system by firms in developing countries is high trade costs. Extensive research has shown that trade costs are substantially higher in poor countries than elsewhere (e.g., Arvis et al. 2015). The result is that firms in these countries—most notably the LDCs—are at a competitive disadvantage. High trade costs are one reason many African countries have a very narrow export base, whether measured in terms of the number of products that account for most revenue earned, the number of export markets, or the number of companies that export (Cadot, Carrère, and Strauss-Kahn 2013; Cadot et al. 2011). Dennis and Shepherd (2011) found that a 10% improvement in trade facilitation is associated with a 3% increase in the number of products exported. Higher value-added products and intermediate inputs, such as machinery parts and components, are more sensitive to the quality of logistics services and efficient border clearance than trade in other types of goods (Saslavsky and Shepherd 2012; Zaki 2015). Every extra day it takes in Africa to get a consignment to its destination is equivalent to a 1.5% additional tax (Freund and Rocha 2011). Slow and unpredictable land transport keeps most of sub-Saharan Africa out of manufacturing value chains (Christ and Ferrantino 2011).

The available evidence suggests that trade costs are often an order of magnitude higher than prevailing import tariffs. Even if NTMs are accommodated, export market access barriers are rarely the binding constraint on trade expansion. This is illustrated by the diverging trade performance of East Asian countries as compared with other developing country regions—East Asia has historically benefited less from preferential access to markets than other developing regions. The post-1980 experience makes clear that, in practice, autonomous reforms drive economic development and that a key need is to reduce the operating costs that confront firms, including trade costs created by NTMs, services trade restrictions, and inefficient border management. These and related sources of real trade costs should therefore figure prominently in the 2030 agenda for sustainable development.

In today's highly integrated world economy, with extensive international production and value chains that span many countries,

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<sup>9</sup> In the case of the trade dimensions of goal 17, for example, performance indicators are limited to the weighted average global tariff, the coverage of DFQF access for LDCs, and development assistance. See <http://unstats.un.org/sdgs/> (accessed 30 January 2017).



the level of trade-related transactions and operating costs is a major determinant of the ability of efficient firms to expand their market share. High trade costs increase what firms have to pay for critical inputs of goods and services and decrease the returns they obtain from engaging in exports. Indeed, high trade costs may simply bar productive firms from trading at all, thus precluding the opportunities that are offered by world markets.

Trade costs affect trade and associated investment incentives all along the value chain (Figure 3.5). They impact the costs associated with getting products from where they are produced to a country where they have a buyer; they are incurred at the border, reflecting the time and resource costs of dealing with administrative procedures and red tape; and they continue to impact overall costs, and thus profitability, after products have cleared the border if firms are subjected to inefficient service providers, noncompetitive markets for transport, etc.

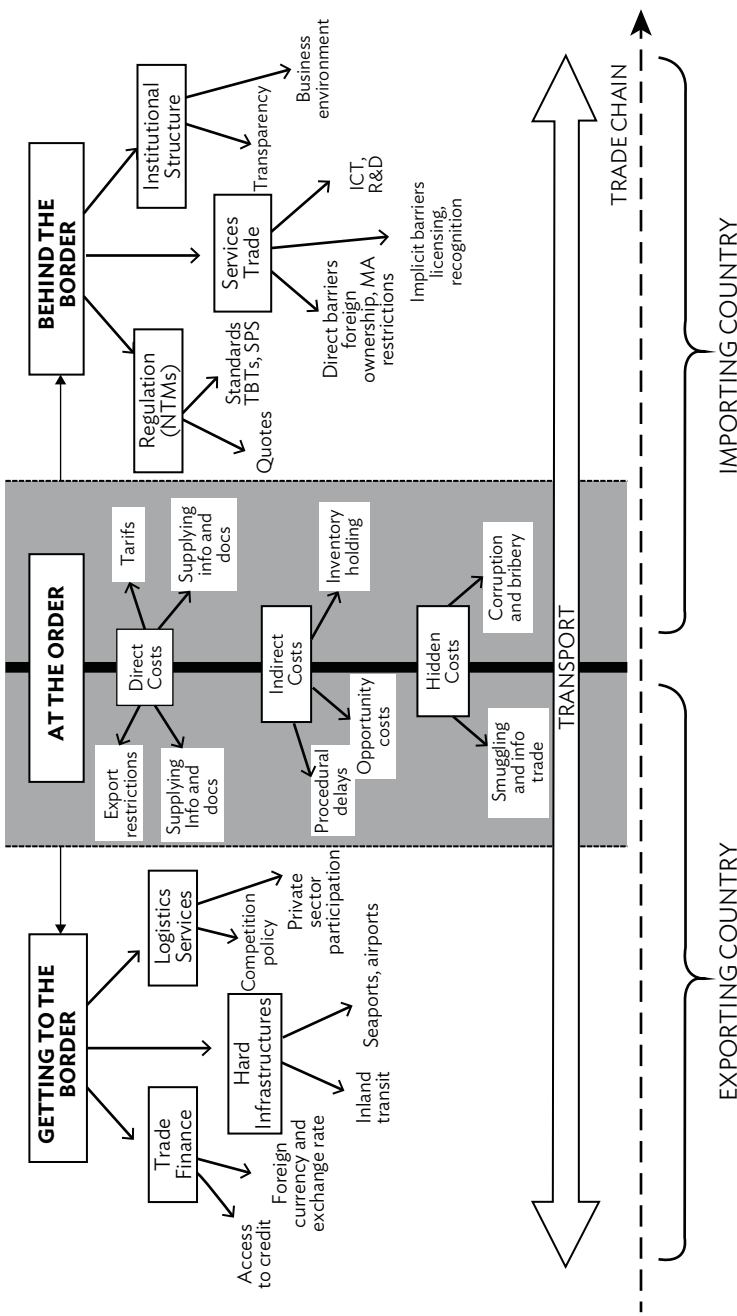
Trade costs also affect trade and investment in services (Miroudot and Shepherd 2016). Regulatory barriers, such as restricting foreign providers from offering services through nationality requirements or banning inward FDI in segments of the transport or communications sectors, will increase costs for all firms and make them less competitive. As noted above, many services are inputs into production; a substantial share of production and operating costs of firms, no matter what sector of activity they are engaged in, will comprise services. The cost, quality, and variety of available services will therefore be a determinant of the competitiveness and productivity of firms. In turn, lowering services trade and investment barriers is likely to have both direct and indirect positive effects on economy-wide productivity.<sup>10</sup>

Barriers to trade and investment in services are often much higher than for goods. Although information on services trade policy is limited, new data sets have characterized the restrictiveness of services trade and investment policies (Borchert, Gootiiz, and Mattoo 2014). The World Bank's Services Trade Restrictiveness Index reveals that barriers to

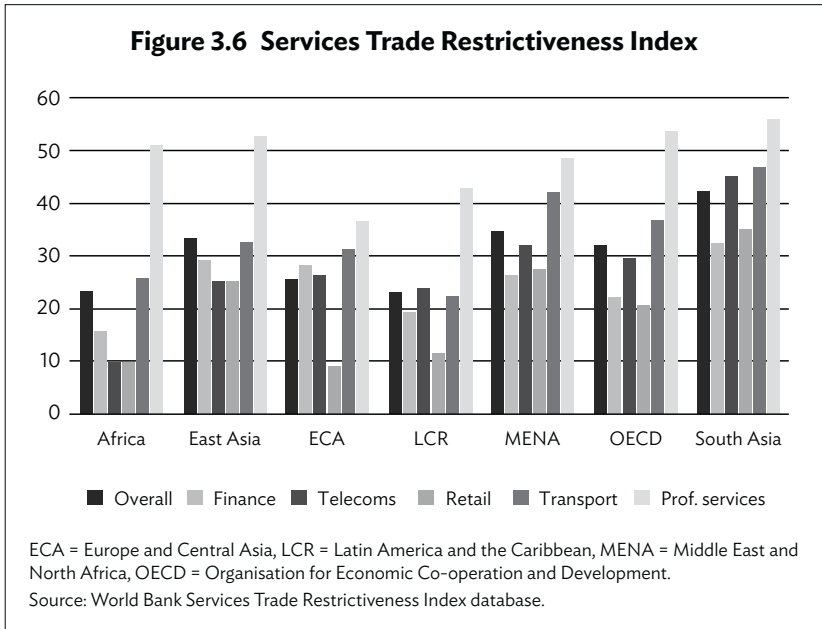
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<sup>10</sup> See e.g., Miroudot, Sauvage, and Shepherd (2012). Using a large sample of countries and firm-level data, Hoekman and Shepherd (2015a) showed that services productivity is a statistically significant determinant of the productivity of manufacturing firms. Many landlocked countries restrict trade in services that are particularly important for value-chain participation and investments. Road and air transport policies are significantly more restrictive in landlocked sub-Saharan African countries than in comparators, reducing connectivity with the rest of the world by increasing the cost of transport services (Arvis et al. 2010). Borchert et al. (2015) concluded that even moderate liberalization of air transportation services could lead to a 25% increase in the number of flights. Actions to facilitate trade in services will increase competition and give firms and households access to a wider variety of services at lower prices (Francois and Hoekman 2010).

**Figure 3.5 How Trade Costs Matter**



ICT = information and communication technology, MA = market access, NTM = nontariff measure, R&D = research and development, SBS = sanitary and phytosanitary measure, TBT = technical barrier to trade.  
 Source: Moise and Le Bris (2015: 12).



trade in services are often much higher than tariffs that apply to imports of goods.<sup>11</sup> They also show that in some developing countries, formal barriers to trade in services are relatively low (Figure 3.6). High barriers to trade in services and high trade costs for services are detrimental to growth prospects given that services “are the future”—technological changes are rapidly increasing the share of products that are digital or that can be digitized.

### 3.4.1 Trade Cost Indicators as a Focal Point for using Trade for Development

The foregoing considerations suggest using specific trade cost indicators to mobilize actions to help low-income countries benefit more from the trading system. Focusing on monitoring trade cost trends would help inform the global community as to the most effective measures available

<sup>11</sup> See Services Trade Restrictions Database. <http://iresearch.worldbank.org/servicetrade/aboutData.htm> and OECD. Services Trade Restrictiveness Index. <http://www.oecd.org/tad/services-trade/services-trade-restrictiveness-index.htm> (accessed 30 January 2017).

to use trade to achieve the SDGs (Hoekman and Shepherd 2015c). There is a precedent for adopting a trade cost target: the Asia-Pacific Economic Cooperation (APEC) members agreed to a common trade facilitation performance target in two consecutive action plans starting in 2001: setting a goal of reducing trade costs by 10% over the 10-year period on a regional basis (APEC Policy Support Unit 2012). Emulating this initiative and building on and learning from the APEC experience could be one element of monitoring progress in leveraging trade for sustainable development. One possibility would be for countries to establish a target for reducing trade costs over several years, e.g., to lower costs of trade for goods and services by 1% per year through 2030.

An international effort to track trade cost developments can build on existing data sets. Recent developments in the empirical international trade literature have made it possible to infer trade costs for a wide variety of countries from 1995 onward, with a data lag of around 2 years for many countries. The UN Economic and Social Commission for Asia and the Pacific (UNESCAP) and the World Bank have partnered to produce a trade costs database, which contains bilateral trade costs in manufacturing and agriculture for over 150 countries. The UNESCAP and World Bank effort provides information on the evolution of trade costs through time in different income groups and regions. Their methodology involves a comparison of domestic costs of trade within countries with those applying to international transactions of goods. It captures all sources of trade costs, not just the costs associated with specific policies. While this is a disadvantage from a policy reform perspective in that it does not help governments identify priority areas, it is an objective measure of overall trade costs on a country-by-country basis, and allows for the tracking over time of the impact of efforts to lower trade costs.

That said, research is needed to break down overall trade cost estimates into their determinants, distinguishing between factors that can be affected by policy changes and public investments, those that require international cooperation (e.g., need to be addressed in the context of regional trade agreements), and those that cannot be changed. Specific initiatives such as the efforts to monitor services trade policies by the OECD, the World Bank, and the WTO, and to collect information on transport costs and logistics performance on a country-by-country basis by the UN Conference on Trade and Development (UNCTAD) and the World Bank (see, e.g., World Bank 2014) already permit an initial “unpacking” and mapping of how different policies impact on trade costs.

A focus on reducing trade costs is fully consistent with growth and poverty reduction; lowering trade costs is likely to be a particularly effective mechanism to increase welfare (real incomes). While trade

cost reductions are in all countries' self-interest, they also benefit trading partners and thus contribute to sustainable development more broadly. The added value of a global initiative on trade cost reduction is not just as an instrument to increase real incomes and attain the SDGs; there is also an important public good or collective action dimension. A large and expanding body of research has documented that the potential benefits for the world as a whole of action in this area is substantial (e.g., Decreux and Fontagné 2015).

In practice, reducing trade costs will require high-level political attention to achieve the needed coordination within governments, as well as cooperation across governments, to identify and implement cross-border projects and joint ventures that benefit both the countries directly and traders located anywhere in the world. Explicit trade cost reduction targets will incentivize the relevant international organizations to focus on assisting governments to achieve them.

Following the successful negotiation of a WTO Trade Facilitation Agreement (TFA) in 2013, the international development community has been focusing on assisting countries to implement the agreement. The trade cost reduction agenda goes far beyond what is covered by the TFA (Hoekman and Shepherd 2015b). Use of trade cost indicators would provide a concrete focal point for both national action and international cooperation, along the lines of what is foreseen in the TFA, but with a more holistic frame of reference. In practice, it may be that the most important sources of trade costs and supply chain frictions concern areas that are not covered by the TFA, e.g., service sector policies or weaknesses in infrastructure. A trade cost reduction target leaves it to governments, working with stakeholders, to determine how best to reduce trade costs, thereby leveraging the implementation of the TFA.

Agreeing on and pursuing trade cost reductions is economically superior to the mercantilist thinking that is embedded in the trade approach that is implicit in the SDGs. Reducing trade costs will help importers and exporters, as well as benefit households in developing countries by reducing prices of goods. A major advantage of a trade cost target is that it is left to the governments concerned—both the developing country government and its trading partners—to identify actions that will reduce them. There are many reasons why costs are high, including own trade policies of developing economies, NTMs at home and abroad, a lack of trade facilitation, weaknesses in transport and logistics, etc. A trade cost reduction target leaves it to governments to work with stakeholders to identify how best to reduce prevailing excess costs. There is no one-size-fits-all associated with achieving a trade cost reduction target.

### 3.4.2 Some Implications for Aid for Trade

From a development perspective, it is not just the effects of prevailing policies in a country that matter for the incentives to trade. Differences across countries in policies for a given product also give rise to trade costs. Addressing this source of costs will require more than a developing country government's unilateral action. International cooperation is called for—both aid for trade and trade agreements. In the case of Aid for Trade (AFT), much has been done following the 2005 WTO ministerial conference in Hong Kong, China, the result of recognition by high-income nations that trade negotiations and liberalization needed to be complemented with assistance to bolster the supply side in low-income economies. In the case of trade agreements, greater willingness is needed to revisit longstanding shibboleths, most notably the insistence on “special and differential treatment” (SDT) for developing countries.

SDT has been a core element of the approach that developing countries have historically pursued in UNCTAD and the WTO and continues to be prominent in the SDGs (see previous section). A rethinking of this approach is called for if trade is to be a more effective instrument to help achieve the post-2015 development agenda. SDT has tended to revolve around arguments that developing countries should be able to maintain high(er) trade barriers and provide less-than-full reciprocity in trade negotiations, as well as efforts to obtain preferential access to major export markets through the generalized system of preferences (GSP) and, more recently, DFQF access for LDCs. Much progress has been attained in pursuing this agenda and both have reached, if not passed, the point of diminishing returns. Most OECD countries now provide DFQF access to most LDCs, but given that average most-favored-nation tariffs have been declining steadily, the value of DFQF treatment, let alone GSP, is inherently limited and is rapidly converging toward zero.

Efforts to limit the extent of own trade policy concessions in agreements are arguably misconceived from a trade and development perspective because they do little to address the factors that matter for competitiveness. Policy areas that stand out in this regard include lowering tariffs, the cost and quality of service inputs, reducing the trade-impeding effects of NTMs, and pursuit of trade facilitation. It must be recognized, however, that dealing with NTMs and opening services markets is more complex than traditional trade liberalization. It is a platitude that tariffs can be reduced at the stroke of a pen by the minister of finance, while regulatory reform cannot. But not enough is being done to deal with the implications of this. This is an area where AFT can do

more to help governments pursue reforms, both on an autonomous basis and via trade agreements.

The launch of the AFT initiative and the creation of the Enhanced Integrated Framework for trade-related technical assistance for the LDCs signified recognition by the WTO membership that technical and financial assistance was needed to help low-income countries improve supply capacity. Many developing countries need to strengthen economic governance and regulatory institutions to ensure that the potential benefits from services liberalization are realized. This calls for greater efforts to ensure a “whole of government” approach to defining and implementing reforms, supported by “knowledge platforms” (Hoekman and Mattoo 2013) that bring together the associated stakeholders and epistemic communities, or “supply chain councils” (Hoekman 2014) that bring together different groups in society that have a direct stake in the operation of international value chains. The idea is to foster substantive, evidence- and analysis-based discussion of the impacts of prevailing policies with a view to building a common understanding of key factors that impede investment and identifying where there are large potential gains from public action. Such mechanisms could help to

- generate information on the effects of NTMs and prevailing regulatory policies to support a broad-based discussion on potential priorities for action (Cadot and Malouche 2012);
- enhance knowledge of regulatory experiences of other countries and what constitutes good practices, including complementary measures to address market failures and attain distributional objectives; and
- bring together representatives of the business community and international agencies to benchmark performance and assess progress in addressing specific trade constraints and institutional weaknesses that reduce investment in international value-chain activities.

In practice, such mechanisms may best be pursued on a regional basis, linked to integration initiatives and institutions, such as the regional development banks. First steps could be to undertake a “mapping exercise” to identify existing international networks of regulators (regional or global) and related epistemic communities. AFT that supports this type of international cooperation could enable progress on services trade liberalization and create more fertile ground for countries to work together to reduce the costs associated with NTMs. Such efforts could also support greater ambition in terms of the design and coverage of trade agreements insofar as they provide greater assurance that the regulatory preconditions for benefiting from commitments to open access to services markets and reducing the negative incidence of NTMs were in place.

### 3.5 Concluding Remarks

The 2030 Agenda for Sustainable Development recognizes that international trade is an important mechanism through which many of the specific goals and targets that have been agreed upon can be achieved. Making trade an effective means of implementation will require action on a broad front. A common denominator of such actions should be to reduce the costs of trade so that firms in developing countries can source the inputs they need to be competitive and give households better access to a range of products and services that will improve their welfare, ranging from food security to health. Many of the SDGs involve services—finance, transport, medical, education, etc. Trade can help improve the availability and quality of services, implying that efforts to reduce costs should include services sectors and not be limited to goods, which to date has been the focus of reforms and AFT projects and programs.

There is still very great scope to leverage trade for development in many countries, including through expansion of supply chain trade, especially in regions where value-chain-based production is limited—most notably Africa. Technological change, the rebalancing of the PRC's economy toward domestic consumption, and a possible more protectionist policy stance in some emerging and advanced economies all point to a potentially less hospitable global environment than what confronted East Asia in recent decades. Insofar as this is the case, it illustrates the need to focus primarily on national policy reforms and more effective regional integration efforts. The potential for greater use of the GVC technology and further specialization and fragmentation of production remains very significant for many developing countries. The same is true for trade in services and prospects for expanding trade in digital products, e-commerce, etc.

Much will depend here on the extent to which countries in Africa, Latin America, the Middle East, and Central Asia manage to increase their GVC participation. Policies matter importantly—action by governments to reduce trade costs and to refrain from protectionism—and on the extent to which international trade in services and digital transactions will expand in coming years. The share of services in total output and employment for the world has been increasing over time as countries become richer. This is nothing new (Kravis, Heston, and Summers 1983; Riddle 1986), but for any level of economic development, the role of services is today more important than ever as a result of technological changes. It is therefore important that in thinking about how trade should figure in the post-2015 development agenda, services are front and center in the growth strategies of low-income countries.



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## Appendix: The 17 Sustainable Development Goals

- Goal 1** End poverty in all its forms everywhere
- Goal 2** End hunger, achieve food security and improved nutrition, and promote sustainable agriculture
- Goal 3** Ensure healthy lives and promote well-being for all at all ages
- Goal 4** Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
- Goal 5** Achieve gender equality and empower all women and girls
- Goal 6** Ensure availability and sustainable management of water and sanitation for all
- Goal 7** Ensure access to affordable, reliable, sustainable, and modern energy for all
- Goal 8** Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
- Goal 9** Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
- Goal 10** Reduce inequality within and among countries
- Goal 11** Make cities and human settlements inclusive, safe, resilient and sustainable
- Goal 12** Ensure sustainable consumption and production patterns
- Goal 13** Take urgent action to combat climate change and its impacts
- Goal 14** Conserve and sustainably use the oceans, seas and marine resources for sustainable development
- Goal 15** Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation and halt biodiversity loss
- Goal 16** Promote peaceful and inclusive societies for sustainable development; provide access to justice for all; and build effective, accountable and inclusive institutions at all levels
- Goal 17** Strengthen the means of implementation and revitalize the global partnership for sustainable development

PART I

**Poverty, Hunger,  
and Inclusive Growth**

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# 4

## Trade and Poverty Reduction

*Irene Brambilla and Guido Porto*

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### 4.1 Introduction

This chapter investigates whether trade can help achieve the Sustainable Development Goals set by the United Nations, particularly the ambitious poverty eradication goal. The first of 17 goals, it proposes to “end poverty in all its forms everywhere.” Other associated targets include:

- (i) by 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day;
- (ii) by 2030, reduce at least by half the proportion of men, women, and children of all ages living in poverty in all its dimensions according to national definitions;
- (iii) implement nationally appropriate social protection systems and measures for all, including floors, and, by 2030, achieve substantial coverage of the poor and the vulnerable;
- (iv) by 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services; ownership and control over land and other forms of property; inheritance; natural resources; appropriate new technology; and financial services, including microfinance;
- (v) by 2030, build the resilience of the poor and those in vulnerable situations, and reduce their exposure and vulnerability to climate-related extreme events and other economic, social, and environmental shocks and disasters;
- (vi) ensure significant mobilization of resources from a variety of sources, including through enhanced development cooperation, to provide adequate and predictable means for developing countries, in particular least developed countries, to implement programs and policies to end poverty in all its dimensions; and



- (vii) create sound policy frameworks at the national, regional, and international levels, based on pro-poor and gender-sensitive development strategies, to support accelerated investment in poverty eradication actions.

Trade<sup>1</sup> can affect poverty through several channels, notably through macroeconomic and microeconomic mechanisms.<sup>2</sup> Macroeconomically, trade affects economic growth, which, in turn, can benefit the poor. Microeconomically, poverty is defined at the household and individual level. Consequently, trade affects poverty through impacts on household behavior. Trade liberalization changes prices, which often determine households' and individuals' economic decisions. Consumption decisions depend on prices as well, and households are affected as consumers. Higher prices lower real expenditures, while lower prices increase them. Consumers will consume less of more expensive goods, and more of the less expensive ones. Supply and production decisions also depend on prices, and households will be affected as income earners. The production of food, for own consumption or for sale; production of cash crops; supply of labor; and wages paid in labor markets are examples of how household incomes can change with trade liberalization.

It is difficult to summarize how trade affects poverty. There are multiple channels that may operate in different directions. Higher prices are good for producers, but are bad for consumers. In addition, households are heterogeneous. A study of the effects of trade liberalization on poverty must consider differences in employment, consumption, and production among the poor. Moreover, trade liberalization may differ across countries, just as it may affect members of the same household differently. Some countries may be relatively open, while others will have much higher protection. The level of trade protection, in turn, may differ across sectors. Some countries may have higher tariffs on agriculture, others on manufacturing or services. Finally, trade liberalization operates and interacts with the general economic environment, institutions, and other policies in different manners, further complicating results.

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<sup>1</sup> For this chapter, trade is defined as anything that affects exports and imports. This can include own tariffs, world interventions (e.g., foreign tariffs, quotas, or standards), regional or multilateral trade agreements (e.g., Doha and Mercosur), or even foreign subsidies (especially in agriculture).

<sup>2</sup> Winters, McCulloch, and McKay (2004) provided an overview of these channels.

## 4.2 Trade and Poverty: Microeconomic Mechanisms

This section uses a theoretical framework to explain how trade policy can affect poverty and to illustrate the associated mechanisms. In this analysis, poverty is a microeconomic issue that operates at the level of households, workers, and people. Since trade affects prices for producers and consumers, the trade–poverty link can be examined by tracing trade and, in turn, how prices affect poverty.

### 4.2.1 Net Consumers and Net Producers

The framework builds on standard agricultural household models (Barnum and Squire 1979; Singh, Squire, and Strauss 1986). The unit of analysis is the household, denoted by  $h$ , and its members. To measure welfare changes, the indirect utility function approach is adopted (Deaton 1997). Welfare changes are mostly associated with changes in household real income.

The indirect utility function of household  $h$  depends on a vector of prices  $p$  and on household income  $y^h$ :

$$V^h(p, y^h) = V^h(p, x_o^h + \sum_j \pi_j^h(p_j)), \quad (1)$$

where the vector  $p$  comprises consumer prices for all goods. In this equation, household income comprises profits from the production of goods  $j$ ,  $\pi_j^h(p_j)$ , and exogenous income,  $x_o^h$ . Labor income, transfers, and other sources of income (i.e., capital income) are left out for the moment.

Consider the impacts of changes in the price of commodity  $j$ . The short-term impacts on a household can be derived by differentiating the indirect utility function:

$$\frac{\partial V^h}{\partial \ln p_i} = \frac{\partial V^h}{\partial \ln y^h} (\phi_i^h - S_i^h). \quad (2)$$

The left side is the object being measured. On the right side,  $(\partial V^h)/(\partial \ln y^h)$  is the marginal utility of money to individual  $h$ ,  $\phi_i^h$  is the share of household income derived the production of good  $i$ , and  $S_i^h$  is the budget share spent in good  $i$ . In Deaton (1989b) and (1997), the quantity

$$b_i^h = (\phi_i^h - S_i^h), \quad (3)$$

is the net benefit ratio. In fact,  $\phi_i^h - S_i^h$  is the money equivalent of the losses or gains for different individuals. Note that  $(\partial V^h)/(\partial \ln y^h)$  is the private marginal utility of income, but the social marginal utility of money is the most important. This summarizes the attitudes of a policy maker toward providing resources to individual  $h$ .

Note that the household is affected both on the consumption and income sides. On the consumption side, consumers are worse off if prices go up, but are better off if prices go down. In a first-order approximation, these impacts can be measured with budget shares,  $S_i^h$ . On the income side, there is also a direct impact on profits if the household produces goods  $i$ , which depends on the share of income attributed to these goods,  $\phi_i^h$ . In ruraleconomies, this source of income can account for a large fraction of total income. In more urbanized economies with more developed labor markets (e.g., many places in Latin America), the role of direct agricultural production will be much less important.

Overall, the right side of this equation establishes the key net-producer/net-consumer result. After a price increase, net consumers (as defined by the difference between budget shares and income shares) are worse off, and net producers are better off. The opposite is true for price declines. Further, it shows that the welfare impacts will be heterogeneous across countries. An exporter of agricultural goods will, on average, benefit from price increases associated with the international liberalization of agriculture, but an importer will probably be hurt by those changes.

This result was originally introduced by Deaton (1989b), who advocated the use of nonparametric density estimation and nonparametric regressions in economic development to study price changes' distributional effects. Deaton used data from the Thailand Socio-Economic Survey of 1981–1982 to explore the distributional consequences of the export tax on rice across all households. He found that an increase in the price of rice, resulting from the elimination of an export tax, would benefit the average household across the entire income distribution. The average poor person, as well as the average rich person, would benefit little. The benefits for the poor were small, because they tend to both consume and produce lots of rice, selling little. The benefits for the rich were also small, because while sellers are often large, there are only a few of them. The gains would be much higher in the middle of income distribution, indicating that the middle class would gain the most from higher rice prices.<sup>3</sup>

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<sup>3</sup> This analysis does not take into account the fiscal implications of eliminating the tax.

The ideas introduced in Deaton's work have been, and still are, extensively utilized in the literature. Examples include Deaton (1989a), for Ivory Coast, Indonesia, and Morocco; Budd (1993), who investigated food prices and rural welfare in Ivory Coast; Benjamin and Deaton (1993), who studied cocoa and coffee in Ivory Coast; Barrett and Dorosh (1996), who looked at rice prices in Madagascar; and Sahn and Sarris (1991), who examined structural adjustments in several sub-Saharan African countries. Deaton (1997) also provided an account of the early use of these techniques in distributional analysis of pricing policies.

#### 4.2.2 Wage Income and Prices of Non-traded Goods

While the net-consumer/net-producer result is intuitive, it rests, in part, on the omission of labor market effects and impacts on the prices of non-traded goods. In a small, open economy that faces exogenous commodity prices (determined in international markets), wages will respond to price changes, mainly because the demand for labor depends on them.<sup>4</sup>

Changes in relative product prices cause some sectors to expand and others to contract. If sectors use factors of production in different proportions, then the relative demand for factors (including skilled labor, unskilled labor, and capital) will change. Even with a fixed labor supply, wages will adjust. If the labor supply reacts as well, an additional channel emerges. In practice, the link between wages and prices depends on the way that product prices affect factor demands and supplies, and changes in factor demands and supplies transmit to wages.<sup>5</sup>

The prices of non-traded goods can also be affected. In the simplest mechanisms, a change in the price of a traded good affects factor prices. This, in turn, affects the cost of production of non-traded goods. As a result, the prices of these goods may change as well. How these prices, including wages, respond to trade policy is an empirical question.

It is simple to amend the theoretical framework to account for these responses. The indirect utility function now is

$$V^h(p, y^h) = V^h(p, x_o^h + \sum_j \pi_j^h (p_j) + \sum_m W_m^h), \quad (4)$$

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<sup>4</sup> Labor supply can be affected by prices as well, but this is not the discussion for the moment.

<sup>5</sup> It is possible to imagine situations where wages would not react to a change in a given price, or situations where wages would increase or decrease.

where  $\sum_m W_m^h$  is the wage income of household  $h$ , which is the sum of the wages of all working members  $m$  ( $W_m^h$ ).

The first-order impact of changes in the price of good  $i$  can be derived by differentiating equation 4. The net benefit ratio becomes

$$b_i^h = (b_i^h - S_i^h) d \ln p_i + \sum_m \theta_m^h \varepsilon w_{i,m}^h d \ln p_i, \quad (5)$$

where  $\theta_m^h$  is the share of the wage income of member  $m$  in total household income, and  $\varepsilon w_{i,m}^h$  is the elasticity of the wage earned by household member  $m$  with respect to price  $p_i$ .

Equation 5 summarizes the first-order impacts of a price change. The first term on the right re-establishes the net-consumer/net-producer result as before. Now, price changes also affect wages. This channel is described by the second term to the right of equation 5.

When there is a price change, demand for different types and amounts of labor can change, thus affecting equilibrium wages. In equation 5, these responses are captured by the elasticities  $\varepsilon w_{i,m}^h$ , which will vary from one household member to another, provided that different members are endowed with different skills (i.e., unskilled, semiskilled, or skilled labor) or if they work in different sectors. These impacts on labor income depend on the share contributed by the wages of different members,  $\theta_m^h$ . Clearly, if countries differ in technologies, endowments, or labor regulations, the responses of equilibrium wages to prices can be heterogeneous across different economies.

In the presence of wage adjustments, the standard net-consumer/net-producer proposition needs to be modified. Consider an extreme case where a farm-household consumes a product, but does not produce it. Instead, the farm earns income from selling labor to neighboring farms. Omitting wages, this household is a net consumer and could thus be hurt by a price increase. However, if wages respond positively to prices, the final welfare effect may not entail a loss.

Ravallion (1990) studied this type of wage response, exploring the conditions under which net consumers of food products in Bangladesh lose or gain in the face of increased food prices when rural wages adjust. Ravallion estimated low elasticities of agricultural wages to food prices and concluded that responses are unlikely to be strong enough to offset the short-term adverse distributional effects of higher food prices. The long-term estimates appeared to be more favorable to the poor, but it would take around 4 years for any gains to materialize.

Boyce and Ravallion (1991) looked at this issue using newer data for Bangladesh. They set up a dynamic econometric model of agricultural wages and rice prices, finding that increases in prices relative to

manufactured goods have adverse effects on the real wages in terms of rice in both the short and long term.

Porto (2005, 2006) used two models where the first-order approximation was extended to allow for wage adjustments. Porto derived additional terms in the expression for the compensating variation. A major component of  $b$  was the direct impact on wages (as in equation 5 here). Also, a given farm could either sell or buy labor in the farm-labor market; thus, the estimation of  $b$  had to include additional impacts that arose due to changed wage earnings or to changed paid wages. Porto (2005) found that increases in the prices of agro-manufactured exports such as wine (a major Moldova export) reduce poverty. Moreover, wages respond positively to export prices, causing first-order gains that dominate both the consumption losses due to higher consumer prices and the profit losses due to higher wages paid to hired labor. Porto (2006) further explored the distributional consequences of Mercosur in Argentina and found welfare gains for average poor and middle-income households (and negligible effects for the wealthiest households), because, on top of gains from price reductions due to tariff cuts, wage changes occurred that favor unskilled workers, who are concentrated at the bottom of the income distribution, over skilled workers.

Ferreira et al. (2011) and Jacoby (2013) studied similar issues, but instead of looking at trade policy, they investigated commodity price impacts. Ferreira et al. (2011) looked at Brazil and found large, negative consumption effects, but positive, progressive income effects, particularly in rural areas. Thus, overall, the Brazilian middle-income household has suffered larger proportional losses than the very poor or rich households. Jacoby (2013) reached a similar conclusion in his study of food prices in India. Specifically, he found that, once the wage gains are accounted for, rural households across the income spectrum actually benefit from higher agricultural commodity prices.

It is noteworthy that, in all of these papers, wage adjustment is a fundamental channel through which trade operates. An important element of this work is the estimation of the responses of wages to prices, i.e., wage-price elasticities. Ravallion (1990) used an aggregate time series of agricultural wages and rice prices to estimate them. Porto (2005, 2006) combined time series of prices with time series of household surveys for identification. In his study of the North American Free Trade Agreement and Mexico, Nicita (2009) adopted Porto's approach and combined a time series of regional prices and household surveys to link wages to agricultural and manufacturing export prices. Nicita, Olarrega, and Porto (2014) proposed a different estimation using

the duality theory and trade and endowment data to infer wage-price from Rybczynski elasticities. Another way to estimate wage-price elasticities using simulation methods can be found in Artuc, Lederman, and Porto (2015) and Artuc, Porto, and Rijkers (2016).

Regarding the responses of non-traded goods, spillovers are defined as the impacts of a change in market  $i$  on the activity in market  $j$ . There are two types of spillovers: (i) production linkages occur when the expansion of a sector affects upstream activities (i.e., backward linkages) or downstream activities (i.e., forward linkages), and (ii) expenditure linkages occur when the income increase due to sector expansion raises the demand for outputs and thus the derived demand for inputs in other sectors. Porto (2015) also described a variant of the spillover mechanism in which markets may be segmented so that wages can differ across sectors. However, sectors are related via forward and backward linkages, so that an expansion of one sector may have implications on others.

Here, a different type of spillover exists that arises when other product markets, rather than labor markets, are affected. These spillovers are likely to take place in non-traded goods. As shown previously, changes in commodity prices affect factor prices, including wages. If the wages earned in non-traded sectors are affected, then the cost of producing these goods will change. This, in turn, will affect the equilibrium prices of these goods. As a result, there are additional welfare impacts on the consumption side. Notice that these are first-order impacts. To derive the impacts, the indirect utility function is

$$V^h(p^T, p^{NT}, y^h) = V^h(p, x_o^h + \sum_j \pi_j^h (p_j) + \sum_m W_m^h), \quad (6)$$

which is now a function of both traded good prices  $p^T$  and non-traded good prices  $p^{NT}$ .

The net benefit ratios are

$$b_i^h = (b_i^h - S_i^h) d \ln p_i + \sum_m \theta_m^h \varepsilon w_{i,m}^h d \ln p_i - \sum_k S_k^h \frac{\partial \ln p_k}{\partial \ln p_i} d \ln p_i, \quad (7)$$

where  $S_k^h$  is the budget share spent in non-traded good  $m$ .

Porto (2006) showed how to estimate these impacts for Mercosur. He used a series of prices to recover the elasticity of the price of non-traded goods with respect to the prices of traded products. As in equation 2, the first-order impacts are given the product of the induced changes in the prices of non-traded goods and the budget shares spent on those goods. Porto found that the tariff cuts of Mercosur caused the prices of non-traded goods to decline and households to benefit.

Artuc, Porto, and Rijkers (2016) offered an alternative way to compute these elasticities using simulation methods.

### 4.2.3 Price Transmission

Price changes must be explored to understand how trade policies and trade shocks transmit to the local economy and how this link depends on market structure, competition policies, infrastructure, transport, and distribution costs.

There are two related issues: (i) the pass-through of international prices to the domestic economy, and (ii) the pass-through to the household. Standard models of international trade and economics assume competitive markets (and homogenous goods) and frictionless trade. In this scenario, markets are integrated, and the law of one price holds. Domestic prices are equal to international prices converted to the local currency. A slightly more detailed model allows for transport and distribution costs, as well as for trade policy. If  $p_i$  is the domestic price of an importable,  $p_i^*$  is the international price,  $e_i$  is the exchange rate,  $tr_i$  are international transaction costs, and  $\tau_i$  is the tariff rate applied to goods  $i$ , then

$$p_i = p_i^* e_i (1 + tr_i)(1 + \tau_i) + \gamma_i, \quad (8)$$

where  $\gamma_i$  represents internal transport, resale, marketing, and distribution costs. If goods  $i$  are exported, then

$$p_i = p_i^* e_i (1 - tr_i)(1 - r_i) - \gamma_i, \quad (9)$$

where  $r_i$  is the export tax.

This framework is now used to explore various issues concerning the responses of domestic prices to changes in international prices, exchange rates, national trade policies, international trade policies, and transaction costs. Clearly, if these equations hold, then a proportional change in the exchange rate  $e_i$ , international price  $p_i^*$ , or tariff (rather in  $(1 + \tau_i)$ ) is fully transmitted to domestic prices.

The law of one price relies on strong assumptions, and there is evidence against it. In their review, Goldberg and Knetter (1997) concluded that a pass-through rate of around 60% is expected. In another comprehensive analysis of pass-through rates, Campa and Goldberg (2005) found large differences across developed countries. The estimated rate for the US is 42%, 98% for France, 80% for Germany, and 46% for the UK.



There are various reasons why the law of one price may fail. One important factor, especially for trade and poverty, is imperfect competition (Feenstra 1989). If markets are not competitive, firms can charge a markup on marginal costs, and these may depend on trade policy or trade shocks. Using import unit values for cars, compact trucks, and heavy motorcycles from trade flows between the US and Japan, Feenstra tested for the symmetry between exchange rate and tariff rate pass-throughs implicit in equation 3. For trucks, he found an exchange rate pass-through of 63% and a tariff rate pass-through of 57%. For motorcycles, he reported an exchange rate pass-through of 89%–100% and tariff rate pass-through of over 100%.

A different instance of imperfect competition and pass-through occurs in agriculture export markets. In rural areas, and especially in sub-Saharan Africa, most farmers produce for home consumption. Yet some are engaged in high-value export agriculture, such as coffee, cotton, cocoa, and tobacco. Often, commercialization of export agriculture is produced along a supply chain where intermediaries, exporters, and downstream producers interact with farmers. Sectors are typically concentrated, with a few firms competing for the commodities produced by atomistic smallholders. This structure of the market conduces to oligopsony power: firms have power over farmers and are able to extract some of the surplus that the export market generates. The extent of oligopsony power depends on the number of competitors and relative size of each (i.e., the distribution of market shares). Changes in the configuration of the market will thus affect the way that the firms interact with farmers. In principle, tighter competition induced by entry or policies that foster competition (e.g., merger or antitrust policies) can affect farm-gate prices and, therefore, household welfare and poverty. These issues have been studied in Africa (e.g., Porto, Depretris Chauvin, Olarreaga 2011), finding that increases in competition in export agriculture can indeed have strong impacts on poverty reduction, especially in rural areas.

Even if there is full pass-through of trade shocks to prices at the border, the transmission to households may still be imperfect because of transport and distribution costs and the internal structure of competition. Nicita (2009) studied Mexico, which aggressively opened the economy in the last 2 decades while domestic markets are poorly interconnected across regions. This creates different pass-through patterns (i.e., perfect and imperfect) across regions because location affects transport cost. Using *ex-post* econometrics based on household data, Nicita estimated different pass-through rates for agriculture and manufacturing. In agriculture, tariffs transmit to prices with a coefficient equal to 0.349, and distance does not matter (i.e., more homogenous, integrated, and thus competitive markets). In manufacturing, tariffs transmit to prices

with a coefficient equal to 0.702 at the border. This pass-through declines significantly with distance; the pass-through at the border is 70%; 40% at 1,000 kilometers; and 20% at 2,000 kilometers.

#### 4.2.4 Additional Issues

In the framework outlined in this section, households can adjust to trade shocks both on the consumption and income side. Consumption adjustment occurs when a household consumes fewer expensive goods due to trade and more inexpensive goods. Income adjustment occurs when there are supply responses. In farm economies, the most relevant supply responses take place in agriculture and include, for instance, households switching from potatoes to cotton. In economies with more developed labor markets, labor supply decisions may be more important. Also, if labor markets are segmented, labor reallocation can play a major role in the quantification of the gains from trade (Artuc, Lederman, Porto 2015). In the Deaton (1989) framework, these types of adjustments are considered second order and are consequently small. While this is true in theory, the role of household adjustment increases when price changes are large (Friedman and Levinsohn 2002) and when extensive reforms covering many goods are considered (Ivanic and Martin 2008; Fajgelbaum and Khandelwal 2015).

The previous analysis omitted the responses of labor markets. Yet many households earn some of their living (and sometimes a large fraction of it) from wages. If wages depend on the prices of goods affected by the trade reforms, then these mechanisms should be incorporated when classifying households as net producers or net consumers. The impact of trade now suddenly depends on how wages respond to price changes. This, in turn, depends on whether labor markets are integrated or segmented and if there are spillovers and backward and forward linkages (Ravallion 1990; Porto 2005, 2006). The way labor markets function may also depend on complementary domestic factors, including labor market regulations, labor laws, the flexibility to hire and fire workers, and migration costs.

An important instance when the first-order approximation may fail is if the principle of separability does not hold. Under perfect markets, household production decisions are separated from its consumption decisions, and this result greatly simplifies the analysis. However, if markets are not perfect, then the net-consumer/net-producer proposition is not satisfied, and the conclusions derived from it can be misleading.

Consider two examples of potential problems with the lack of separability (Brambilla, Porto, Tarozzi 2010). If labor markets are

imperfect and limited off-farm employment opportunities exist, then the market wage will differ from the shadow wage of own labor and outside, hired labor. This affects how the welfare impacts of price changes are measured and invalidates the net benefit ratio (Deaton 1989). As another example, consider a case where there are imperfections in credit and capital markets, and households thus need to rely on own funding to finance productive investments. In this case, a decline in the prices of cash crops, which provide the only way to raise cash, can make the cash-in-advance constraint binding with severe repercussions for household welfare.<sup>6</sup>

Factors like access to credit, inputs, transport, education, and health affect adjustment both in consumption and production. If, for example, trade liberalization inflates export crop prices, but farmers cannot increase production because of lack of infrastructure, then gains from trade will not be realized. Balat, Brambilla, and Porto (2009) showed how marketing costs (i.e., the cost of reaching export markets) can hinder farm participation in exports in Uganda in coffee, tea, cotton, or fruits, thus eroding the poverty eradication impact of trade reforms.

The other role of the complementary agenda is related to separation of property. The principle of separation fails when there are market failures or missing markets, and often these failures are associated with policies or distortions in the local economy. Cash constraints may result from credit constraints, which are the consequence of moral hazard and a deficient judicial system. Limitations in off-farm employment may arise because of monitoring costs or sluggish firm adjustment due to uncertainty about the rule of law. It is not clear whether the principle of separability holds. Benjamin (1992) found evidence that supports separability in Indonesia, but Le (2009, 2010) found evidence inconsistent with it in Viet Nam.

In the end, markets may work well in some cases and not in others. More importantly, the way the market works in different countries may depend on a complementary agenda. So far, this has been examined as factors limiting households' responses to trade reforms. One way to visualize this is to think of trade reforms as causing price changes that reach households while these households cannot react due to insufficient complementarities.

A different view is when trade reforms do not reach some households. This idea is related to the imperfect price pass-through issue. In the trade poverty discussion, the theme of imperfect competition raises the issue

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<sup>6</sup> There are other examples of the problems created by market imperfections. Krivonos and Olarreaga (2009) and Porto (2008), for instance, showed how the conclusions of the first-order approach can change when there is unemployment in the labor market.

of supply chain organization and competition policies. For instance, regarding rural markets and export crops, the supply chain structure may affect how prices transmit to the local economy, such as in African marketing boards. How changes in international prices filter down to producers depends to a large extent on the level of competition across different supply chain layers. In turn, the extent of competition may depend on domestic policies such as liberalization of internal markets and entry deregulation. Research on Zambia (Brambilla and Porto 2011) and Madagascar (Cadot, Dutoit, and de Melo 2009) uncovered some interactions among market structure, household responses, and poverty impacts of trade.

Another reason why changes in border prices may not reach households is lack of complementarities (Cadot, Dutoit, and Olarreaga 2010). For example, with deficient transport infrastructure, some remote regions may become isolated from world markets if costs are prohibitive. If markets are isolated, producers will not be able to enjoy higher prices, but consumers will also be cushioned from them. Similarly, lower prices will not hurt producers, but neither will they benefit consumers (e.g., Nicita 2009).

Growth can indeed reduce absolute poverty if it affects the poor. There may be an unbalanced growth process favoring the rich more than the poor, but in the income- and expenditure-based definition of poverty, it is reasonable to argue that growth should be a poverty reduction engine. For instance, Dollar and Kraay (2002) found that a 1.0% rise in real gross domestic product raises the income of the poorest by 1.2%. Ravallion (2001) estimated that a 1.0% increase in the mean income reduces, on average, the share of the population below the absolute poverty line by 2.5%.

The role of trade in fostering growth, however, is less clear. Trade liberalization allows for a more efficient use of resources, promotes gains in technical efficiency, induces gains from increasing returns to scale, and fosters technological change. Yet these positive impacts on growth may not take place if factor reallocations are costly due to factor market frictions and distortions or if trade induces specialization in low-growth industries. The available empirical evidence seems to favor the notion that trade is good for growth, but the studies are not totally convincing or conclusive.<sup>7</sup>

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<sup>7</sup> For instance, Sachs and Warner (1995) used cross-country regressions to suggest that openness is associated with faster growth, and Dollar and Kraay (2004) used decade-over-decade changes in the volume of trade as an imperfect proxy for changes in trade policy. In a dataset spanning 100 countries, they found that changes in growth rates are highly correlated with changes in trade volumes, controlling for lagged growth and addressing a variety of econometric difficulties.

## 4.2.5 Illustrating the Mechanisms

There is little controversy about how households are affected by price changes, including those brought about by trade policy. Households consume goods and services, benefit from price declines, and are hurt by price increases. In farm-households, some goods are also produced within the family, such as food crops (e.g., maize or rice), as well as cash or export crops (e.g., coffee, cotton, or cocoa). As producers, households are harmed by price declines and benefit from price increases. Since households are often both consumers and producers (especially of agricultural goods), higher prices hurt net consumers, but benefit net producers (and vice versa). This is the net-producer/net-consumer proposition, originally discussed in Deaton (1989) and later adopted by many researchers.

Using the Encuesta Nacional de Ingreso y Gasto de los Hogares household survey in Mexico, the following exercise was based on Lederman and Porto (2016). In the first panel of Table 4.1, the first-order welfare impacts of a hypothetical increase of 20% in corn prices

**Table 4.1 Main Channels for Price Changes, Trade, and Poverty (in %)**

	Net Producers	Net Consumers	All
<b>First-Order Effects</b>			
Consumption effects	-0.99	-2.70	-1.99
Production effects	2.78	0.77	1.60
Net effects	1.78	-1.93	-0.39
<b>Segmented Labor Markets</b>			
Income effects	7.22	1.99	4.16
Net effects	6.23	-0.71	2.17
<b>Labor Market Spillovers</b>			
Income effects	10.77	3.14	6.31
Net effects	9.78	0.44	4.32
<b>Second-Order Effects</b>			
Consumption effects	-0.93	-2.53	-1.87
Production effects	3.05	0.84	1.76
Net effects	2.12	-1.69	-0.11
<b>Complementary Factors</b>			
Income effects	5.55	1.53	3.20
Net effects	4.56	-1.17	1.21

Source: Authors' calculations based on Porto (2015).

in rural Mexico were computed, perhaps caused by world trade liberalization in agriculture (Porto forthcoming). Net producers would enjoy gains equivalent to 1.78% of their initial (i.e., pre-price increase) average expenditure. Net consumers would suffer a loss of 1.93%. For the whole sample, the average impact of an increase in corn prices is negative, but small (i.e., equivalent to only 0.39% of average national income).

In the second panel, labor markets are assumed to be segmented; thus, only wages in the agricultural sector can respond to corn prices. A wage-price elasticity of 0.40 was used (as estimated in Porto 2008). The income gains of net producers jump to 7.22%, and their net gain is now 6.23%—nearly 3.5 times higher than before. For net consumers, the income gains are more modest, of around 1.99%, and these gains are not enough to offset the consumption losses. In the end, even with wage responses, net consumers would lose from higher corn prices. The national average effect would, however, be positive, as higher corn prices would bring welfare increases of 2.17% on average.

In another example, spillovers from corn prices to the wages of self-employed individuals are allowed in rural areas. The idea is that increases in agricultural prices may raise the derived demand for labor in services, odd jobs, and, more generally, in local rural labor markets. Using the same wage-price elasticity as before (0.40), the following welfare impacts were estimated: (i) the income gain of net producers would be equivalent to 10.22% of their initial income, and the net gain would be 9.78%; (ii) net consumers would also gain, with an income gain of 3.44% and a net gain of 0.44%; and (iii) the average national gain would be equivalent to 4.32% of initial income.

Turning to the role of household adjustments, an example is shown in the fourth panel of the table, where consumption substitutions and supply responses were estimated.<sup>8</sup> Allowing for consumption and production second-order effects does not affect the results. The gains for net producers are slightly larger, and the losses for net consumers are slightly smaller, but the welfare impacts are not affected much. As pointed out above, however, these conclusions may change if price changes are large or if many goods produced and consumed are affected simultaneously (as is likely to be the case in actual trade reforms).

Finally, an example of the role of complementarities in the case of corn in Mexico is in the fifth panel of the table. Concurrently with the increase in corn prices, it was assumed there are also complementary factors that allow farmers to expand production at no additional cost. This could occur, for example, due to productivity gains from transport,

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<sup>8</sup> A full set of demand elasticities is in Porto (2015). For the purpose of this analysis, a corn supply elasticity of 1 was assumed.

education, or extension services.<sup>9</sup> The complementary agenda can play a significant role in boosting welfare gains. Compared to the first-order effects of the first panel, net gains for net producers were estimated at 4.56% (instead of 1.78%) and net losses for net consumers at 1.17% (instead of 1.93%). Interestingly, when the complementary agenda kicks in, the national average loss of 0.39% turns into a national average gain of 1.21%.

### 4.3 Trade Liberalization and Poverty

In this section, an empirical exercise measured the impacts of trade liberalization in several developing or low-income countries in Africa. Household survey data were used for each country to measure the consumption effects, the income effect (including both the sales and labor income effects), and the overall effects of trade policy. The surveys used were Ghana Living Standards Survey 1998, 1998 National Household Poverty Survey Report of the Gambia, Malawi Second Integrated Household Survey 2004–2005, Nigeria Living Standards Survey 2003–2004, National Household Survey 2005–2006 of Uganda, and South Africa Income and Expenditure Survey 2010–2011.<sup>10</sup> From the surveys, expenditures and income variables were constructed, as well as an aggregate measure of household welfare, i.e., the level of per capita expenditure (at the household level). Budget shares, income shares, and labor income shares were also computed to calculate first-order approximations.

The trade liberalization episode considered here was a full elimination of own tariffs. A full pass-through was assumed so that price changes are approximately equal to the negative of the initial level of tariffs.<sup>11</sup> This allowed calculation of the welfare effects by multiplying the price changes with income and budget shares. To describe the results, average effects were computed conditional on the well-being level of different households using standard nonparametric techniques, allowing exploration of the impacts across income distribution, the poor, the middle class, and richer households. Results are reported in Figures 4.1 to 4.6. Each of the six case studies uncovers different effects patterns.

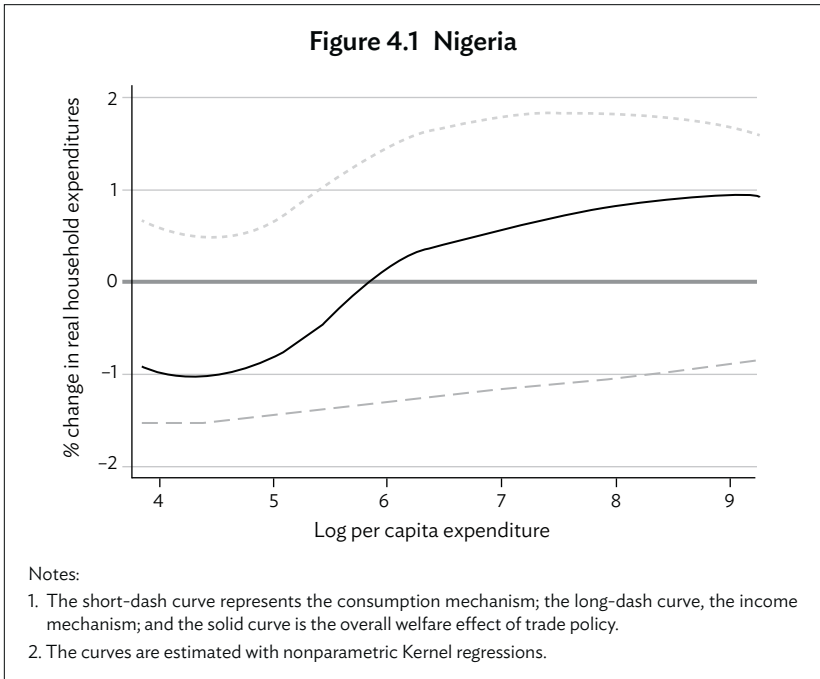
In Nigeria, on average, the poorest households lose with tariff cuts, while richer households gain (Figure 4.1). This goes against the poverty reduction goal. The consumption effects are positive for all households,

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<sup>9</sup> See the case studies in Hoekman and Olarreaga (2007) for details.

<sup>10</sup> Details on these surveys can be found in Porto, Depretris Chauvin, and Olarreaga (2012) and Nicita, Olarreaga, and Porto (2014).

<sup>11</sup> This exercise follows the analysis of Nicita, Olarreaga, and Porto (2014).



while the income effects are negative. The income losses for the poor dominate their consumption gains. Instead, the consumption gains for the richer households (which are larger than those of poorer families) dominate their income losses (which in turn are smaller than those of poorer families).

In Ghana, the overall effects of trade liberalization are positive, on average, for everyone (Figure 4.2). The impacts are larger for richer households, so trade is pro-rich. This is driven by two mechanisms: the consumption effects are positive and roughly similar across households, while the income effects are negative, but smaller for richer households.

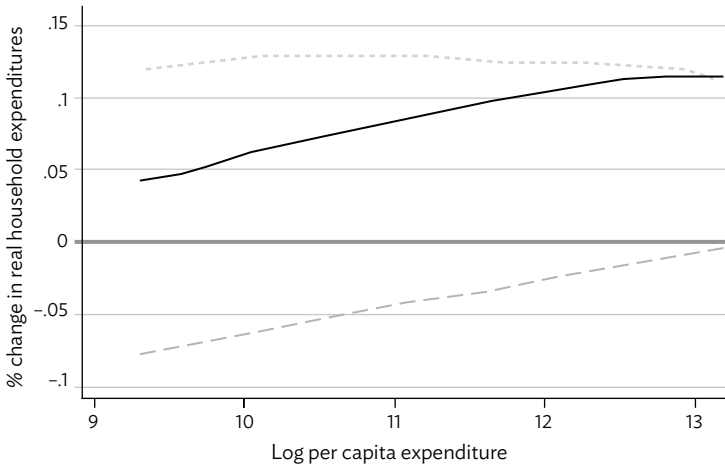
Figure 4.3 shows the case of Malawi. It is similar to Ghana in that the overall effects are positive, on average, for all households. It is different from Ghana in that the poorer households seem to benefit more than the richer ones.

A different pattern emerges for The Gambia (Figure 4.4). The overall effects are positive, on average, for all households, as in Ghana and Malawi. Unlike all the previous cases, however, the poor gain from the consumption mechanism, but they lose from the income mechanisms. Richer families benefit both on the consumption and income sides.

Uganda (Figure 4.5) displays yet another pattern. Here, the overall effects are positive for the poor and negative for the rich. While the



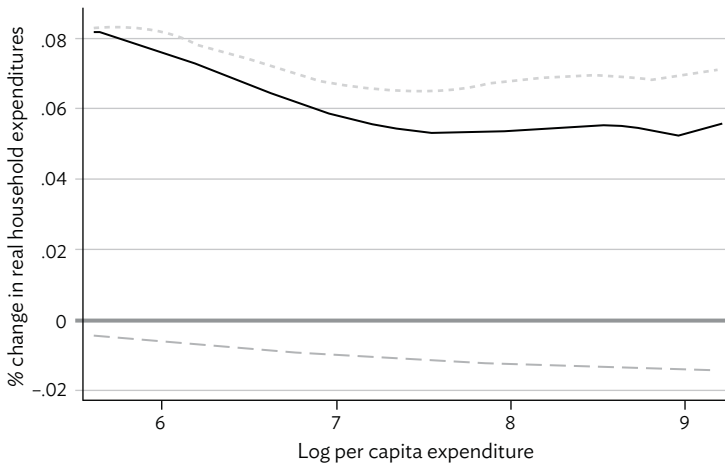
**Figure 4.2 Ghana**



**Notes:**

1. The short-dash curve represents the consumption mechanism; the long-dash curve, the income mechanism; and the solid curve is the overall welfare effect of trade policy.
2. The curves are estimated with nonparametric Kernel regressions.

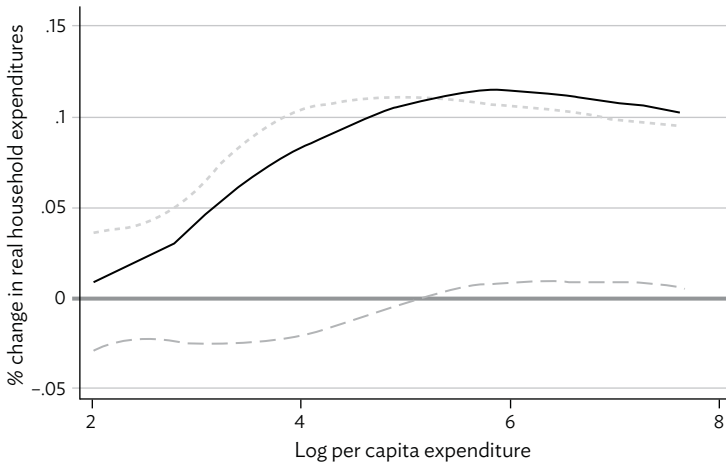
**Figure 4.3 Malawi**



**Notes:**

1. The short-dash curve represents the consumption mechanism; the long-dash curve, the income mechanism; and the solid curve is the overall welfare effect of trade policy.
2. The curves are estimated with nonparametric Kernel regressions.

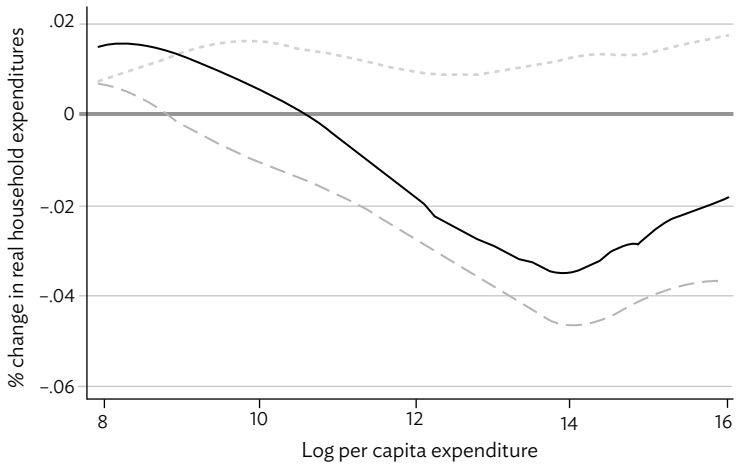
Figure 4.4 The Gambia



Notes:

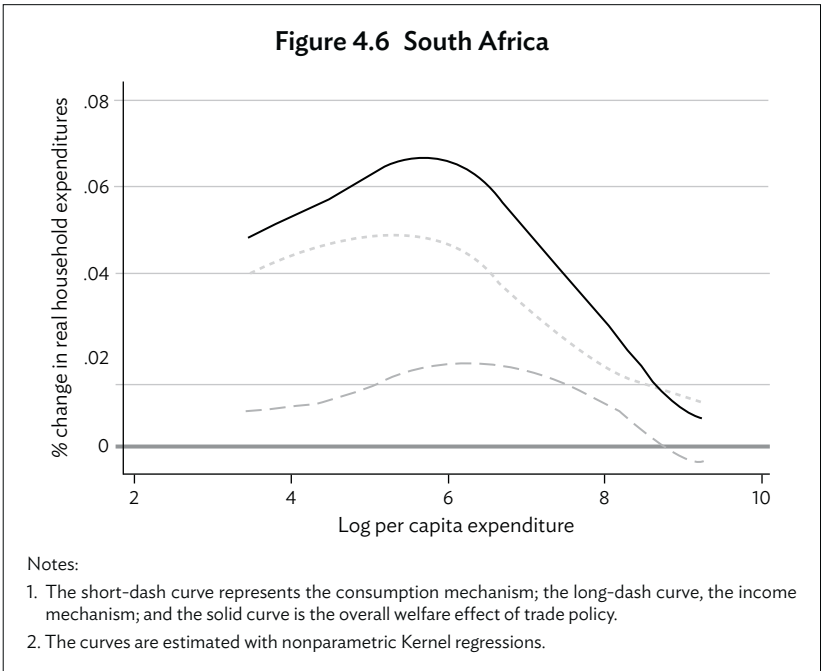
1. The short-dash curve represents the consumption mechanism; the long-dash curve, the income mechanism; and the solid curve is the overall welfare effect of trade policy.
2. The curves are estimated with nonparametric Kernel regressions.

Figure 4.5 Uganda



Notes:

1. The short-dash curve represents the consumption mechanism; the long-dash curve, the income mechanism; and the solid curve is the overall welfare effect of trade policy.
2. The curves are estimated with nonparametric Kernel regressions.



consumption effects are similar across households, the income effects are negative and much larger for richer households.

Finally, South Africa (Figure 4.6) displays a case where the overall effects are positive, and both the consumption and income effects are positive as well.

## 4.4 Trade and Complementary Policies

While there are strong theoretical grounds to advocate for gains from trade, it is not obvious that they can be realized in practice. Also, even if there are aggregate gains from trade, there will most likely be winners and losers from trade reforms. The losers may, or may not, be the poor. Indeed, the impacts are heterogeneous, not only within a country (i.e., across the income distribution), but also across countries. To a large extent, this is because the effects of trade policies depend on the economic environment, such as differences in endowments across households and countries, frictions in factor markets, the extent of imperfect competition, and the economic policy setting (e.g., other taxes, distortions, and the institutional framework). It is, therefore,

difficult to identify a set of good policies that should accompany trade reforms to make the most of any trade liberalization episode. This is not inherent to trade policy; it is a more general conclusion in various policy forums.

An example is the book edited by Cohen and Easterly, *What Works in Development: Thinking Big and Thinking Small*. Cohen and Easterly compiled several papers from renowned experts on policies that work for development and, in particular, on whether academics and policy makers should focus on big answers and policies or smaller projects. One of the reasons people tend to see a crisis in the “thinking big” approach is because of how difficult it is to pin down major growth determinants. Durlauf, Johnson, and Temple (2005) identified 143 determinants of growth and 41 theories to explain it. With an extreme approach, Levine and Renelt (1992) found, however, that only a few of those determinants are robust. More lenient approaches identify a few more robust variables, but still too many. The Commission on Growth and Development (2008) summarized, “It is hard to know how the economy will respond to a policy, and the right answer in the present moment may not apply in the future.”

Similar conclusions apply to the complementary agenda to trade reforms. Trade liberalization is good, in aggregate and across the income distribution, including the poor. Yet trade liberalization must be accompanied by sound supporting policies. The policies that are likely to be convenient include those that facilitate and transmit trade, such as competition policies in traded sectors; smooth adjustments in factor markets, such as labor market frictions and capital reallocation costs; encourage specialization in goods with comparative advantage, such as technical advice or input adoption; and help the losers in the short term and make them winners in the longer term.

## 4.5 Conclusions

This chapter explored whether trade can help or hinder the achievement of the poverty eradication goal of the United Nations Sustainable Development Goals. The impression that emerges from the literature and empirical exercises is that trade can be positive for all types of households, including the poor. However, its effects are heterogeneous, even conditional of broad household characteristics. In principle, it is possible to observe poor households both benefiting from trade liberalization and being hurt by trade reforms. The impacts depend on consumption and production patterns, household endowments, and household characteristics (e.g., demographic or geographic).

In addition, there is consensus that trade liberalization needs to be accompanied by complementary policies, either to boost the resulting gains or to ameliorate potential negative impacts. The design of the complementary agenda is difficult to establish because countries are heterogeneous in their characteristics. Specific policy advocacy requires a careful examination of the environment in which trade liberalization may take place and on the policy and institutional context in which it happens.

Overall, a well-structured trade liberalization agenda, together with a sound complementary agenda, will help reach the Sustainable Development Goal. Trade is certainly not the only element in play, but it can be an important contributing factor.

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# 5

## Agricultural Trade and Hunger

*Will Martin*

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### **5.1 Agricultural Trade and Food Security**

The food security element of the United Nations' second Sustainable Development Goal (SDG) is to “end hunger, achieve food security and improved nutrition.” This is an extraordinarily important goal that rightly commands a high degree of consensus. It is, however, difficult and multifaceted, and seemingly reasonable policies can easily undermine it. Ending hunger is surely the most important goal, but many challenges arise from the so-called double burden of malnutrition in a world in which more people are overweight than undernourished (Masters et al. 2016). Further, the topic is emotionally charged, with often fractious debate (Diaz-Bonilla 2015). However, the importance of good policy for achieving this goal is increased by the recent slowdown in economic growth, which will hamper achieving the first SDG of eliminating poverty by 2030 (Laborde and Martin 2016).

Because this goal is about domestic policy outcomes, it should be addressed directly, as per Tinbergen's famous 1952 principle of policy assignment, rather than using such indirect measures as trade policy. However, there is much interest in the effects of agricultural trade policy on food security and nutrition, with many firmly convinced that restricting trade is important, while others feel that open trade is equally important. Perhaps the most useful approach is to retain the primary focus on direct policies, but also to ask whether trade policy is generally supportive of or prejudicial to the goal. And, if trade measures are to be used, how?

The 1996 World Food Summit provided a widely accepted definition of food security as “...when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.” This

definition focuses on peoples' access to food, rather than on whether sufficient food is available. This is because, as Sen (1981) showed very clearly, while availability is necessary for food security, it is far from sufficient, and massive food insecurity can arise even in the midst of plenty. Its "at all times" dimension also takes into account that food access may be challenged at times of market disruption unless policies are in place to ensure it.

Key food security policies directly targeted to the poor focus on access. In poor countries, social safety nets that ensure access are a high food security priority. A good social safety net helps the poor without risking the rest of the community's welfare. In this, it is in strong contrast with food price measures that are likely to create substantial numbers of both winners and losers. In examining the 2010–2011 price shock, Ivanic, Martin, and Zaman (2011) found, for example, that the net increase in poverty of 44 million was associated with 68 million people falling into poverty and 24 million people (mostly small farmers) moving out of it.

In the longer term, key food security influences operate through consumer real incomes and preference structures, as well as food nutritional content and costs. Raising real incomes through economic development is the most effective long-run approach to dealing with hunger. Promoting broad-based agricultural productivity in developing countries is likely to be particularly effective in reducing poverty-associated hunger because it operates through three channels: raising farmer incomes at any output price level, lowering the cost of food to poor consumers, and raising real wages (Ivanic and Martin 2016).

The goal's nutrition dimension is considerably more wide-ranging than that for food security. There is a well-known transition as consumers' real incomes rise, with a move away from basic carbohydrates, toward a more diverse diet including more fruits, vegetables, and livestock products (Masters et al. 2016). However, consumers may choose unhealthy diets, either because they are unaware of the risks or because of behavioral factors. This has become very controversial as the double burden associated with diet-related conditions such as obesity and diabetes has been more clearly appreciated (Popkin 2003). Potential policies targeted to these problems include education; "nudges" that address behavioral factors (Just and Gabrielyan 2016); and subsidies/taxes that attempt to change food choices.

One other perspective influencing agricultural trade reform proposals arises from concerns about the implications of globalization for small, vulnerable, subsistence producers, and preferences for consumption of locally produced food. Food sovereignty proponents tend to view trade in food negatively, frequently seeing it as exposing

producers to price volatility and competition (Edelman et al. 2014). However, Burnett and Murphy's important 2014 contribution questioned the universality of this approach, pointing out that agricultural exports are important sources of income for many small farmers, and the rising influence of developing countries in the World Trade Organization (WTO).

This chapter first examines how opening to agricultural trade can affect food security, and then turns to the associated impacts of trade policies on domestic prices in developing countries. The discussion first covers the potentialities of agricultural trade liberalization and those of current trade policy responses to changes in world prices, and then turns to the proposed WTO Special Safeguard Mechanism (SSM). The concluding section brings together the overall impacts of trade and trade policies on achieving SDG 2.

## 5.1.1 Links between Trade and Food Security

The first part of this chapter examines the links between trade and food security. The five different channels considered are (i) income changes resulting from opening to trade, (ii) productivity gains from trade, (iii) substitution effects from trade, (iv) food price volatility, and (v) changes in dietary diversity and quality.

### Income Changes from Trade

Standard economic theory shows that opening up to trade will generally raise real national income. The first demonstration of this, by David Ricardo, relied on differences in technology between countries and highlighted one vital—and nonobvious—point. Comparative advantage does not depend on absolute productivity levels, but rather on countries' relative productivity in different products. This means that both a poor and a rich country can—at the same time—benefit from opening to trade. The classic example examines economies where only labor is used for production and focuses on a poor country that uses more to produce each good, but still benefits by it due to comparative advantages. How can it compete despite using more labor in its export than the rich country? Because, unfortunately, it has a lower wage rate than the rich country. The rich country similarly benefits by importing from the poor country. How does it compete in its export, despite having higher wage rates? Because it uses labor more efficiently.

Although more recent models accommodate factor endowments as well as productivity differences, they still come to the same conclusion. Both poor and rich countries can gain by trading with each other. Applied models also view opening to trade as not being an all-or-nothing

decision, and include barriers that influence trade flows. Regional and global trade models also consider one potential route by which some countries may benefit from trade barriers: by improving their terms of trade, perhaps by lowering the price they pay for imports. Since these gains are beggar-thy-neighbor in nature, complete models generally find that removing all barriers will raise real incomes of all, or at least almost all, countries (see, for example, Laborde, Martin, and van der Mensbrugge 2011), and certainly raise global income, allowing the losers from reform to be compensated.

A simple but useful indicator of the importance of agricultural products trade is the sharp diversity in different countries' land endowments. As shown in Table 5.1, agricultural land per person in the United States (US) in 2005–2009 was slightly more than twice the world average, and Brazil's land endowment per person was nearly as high. At the other extreme, Japan and the Republic of Korea had land endowments one-tenth of the world average. Little wonder that Brazil and the US are large agricultural exporters, while Japan and the Republic of Korea are large agricultural importers. These numbers alone are strongly suggestive of the extraordinarily high costs—to both importers and exporters—that would be associated with moving to self-sufficiency. The People's Republic of China (PRC) is a particularly interesting case, with a move to agricultural import status associated with rapid growth related to increasing demand for animal products, although Fukase and

**Table 5.1 Endowments of Agricultural Land (hectares/person)**

Country	1980–1984	1985–1989	1990–1994	1995–1999	2000–2004	2005–2009	1980–2009
Brazil	0.87	0.81	0.79	0.78	0.75	0.75	0.79
PRC	0.21	0.22	0.22	0.21	0.20	0.19	0.21
EU <sup>a</sup>	0.34	0.34	0.33	0.32	0.30	0.29	0.32
India	0.24	0.21	0.19	0.17	0.16	0.15	0.19
Japan	0.05	0.05	0.04	0.04	0.04	0.04	0.04
Korea, Rep. of	0.06	0.05	0.05	0.04	0.04	0.04	0.05
US	1.15	1.09	1.03	0.95	0.88	0.82	0.99
World	0.55	0.52	0.48	0.45	0.42	0.40	0.47

EU = European Union, PRC = People's Republic of China, US = United States.

<sup>a</sup> The EU data reflect the changing membership of the bloc.

Note: Hectares of agricultural land per capita defined as arable land, land in permanent crops, and one-third of land in permanent pasture.

Source: Fukase and Martin (2016).

Martin (2016) conclude that this may be temporary in the PRC's case. The working paper version of this study (Fukase and Martin 2014: 38) also showed how difficult it is to change fundamental trade outcomes. While final agricultural products are highly protected in Japan and the Republic of Korea and policy makers emphasize self-sufficiency, it turns out that self-sufficiency in maize, rice, wheat, and soybeans is around 25% because of feedstuff imports.

Recent work by Costinot and Donaldson (2014) pointed to very large gains from trade within agriculture. They concluded that falling transport costs within the US resulted in a 2.3% annual increase in the total value of output over the period 1880–1920 and a 1.5% annual increase over the period 1950–1997. These gains are of the same order of magnitude as the extraordinary gains from total factor productivity observed over these periods. Given the large differences in prices between countries resulting from combinations of transport costs and trade distortions (Anderson 2009), it might be expected that the income gains from agricultural trade reform would be substantial. Laborde and Martin (2012) note that, even though agriculture makes up only 10% of world trade, the potential income gains from reform appear to make up around 70% of total potential gains. This is primarily because distortions in agricultural markets are so much higher and more variable (across commodities and over time) than those for other products.

But factor endowments are not the only determinant of agricultural trade. Research and development can also impact countries' ability to export agricultural products. Brazil has emerged as an agricultural export powerhouse in large measure because of rapid productivity improvements (Rada and Valdés 2012). The emergence of India as a large exporter of agricultural products, despite a relatively small land endowment, also reflects improved productivity.

### **Productivity Gains from Trade**

In addition to the static gains from trade considered above, much recent literature has examined trade policies' productivity implications in different sectors. Amiti and Konings (2007) found impacts in Indonesian manufacturing. Similar findings are also evident for agriculture in several studies, including Kolady, Spielman, and Cavalieri (2012) for seeds in India; De Silva, Malaga, and Johnson (2014) for Sri Lanka; and Hassine, Robichaud, and Decaluwe (2010) for Tunisia. There is also considerable documentation of specific policy reforms that were critical for productivity growth, such as the liberalization of inexpensive irrigation pumps in Bangladesh in the 1980s (World Bank 1999).

Government retains an important quality-control role when trade in agricultural goods and inputs is opened. Below-specification quality of

fertilizers and seeds appears to be a major expense for African farmers (Bold et al. 2014). Regulatory reform needs to consider the possibility that the use of inferior, illegally imported inputs is a consequence of inappropriate standards or excessive regulations. WTO standards on Technical Barriers to Trade and on Sanitary and Phytosanitary barriers to trade are designed to balance the positive role of standards and the risks that they will be used as hidden trade barriers.

Agricultural productivity growth is likely to have a particularly powerful influence on poverty for several reasons. One is that growth has the potential to directly increase the incomes of the poor, of whom around half are farmers (World Bank 2008; Ravallion and Datt 1996). Another is that agriculture in developing countries is particularly labor intensive so that an increase in productivity is likely to increase the wages of poor workers who are net sellers of labor (Loayza and Raddatz 2010). The third reason is that widespread agricultural productivity growth is likely to lower the cost of basic foods, which make up a large share of the poor's expenditures, including poor farmers (Ivanic and Martin 2016)

### **Substitution Effects**

Trade policy will affect nutritional outcomes through substitution effects as well as income effects. In many cases, these effects will have the same sign. An increase in food prices that lowers a net food buyer's real income will reduce demand for food through both substitution and income effects. However, the dependence of demand on substitution effects means that some whose incomes do not fall below the poverty line may slip into food insecurity following a rise in prices.

There may also be cases where food consumption and real incomes move in opposite directions. A food price increase that raises the incomes of poor people who are net food sellers has ambiguous effects on consumption. The income effect increases food demand either by increasing demand for the foods currently being consumed, or by encouraging a shift toward foods regarded as superior, which likely increases the resources needed to meet demand (Fukase and Martin 2016). It is therefore possible that such a rise in price would have opposite effects on real incomes and on nutritional outcomes.

It is important to consider both income and substitution effects when evaluating both the nutritional impacts and the impacts on trading partners of trade policy responses to price shocks. Do and Levchenko (forthcoming), for instance, argue that insulation against a price increase should be seen as a social policy designed to protect the poor. They consider a price increase in a two-person society in which a poor person is a net buyer and a rich person a net seller. In this case, it is

possible to have a transfer policy that is equivalent to price insulation in terms of income distribution; that is, a transfer from the net seller to the net buyer. But the two are far from equivalent in their impacts

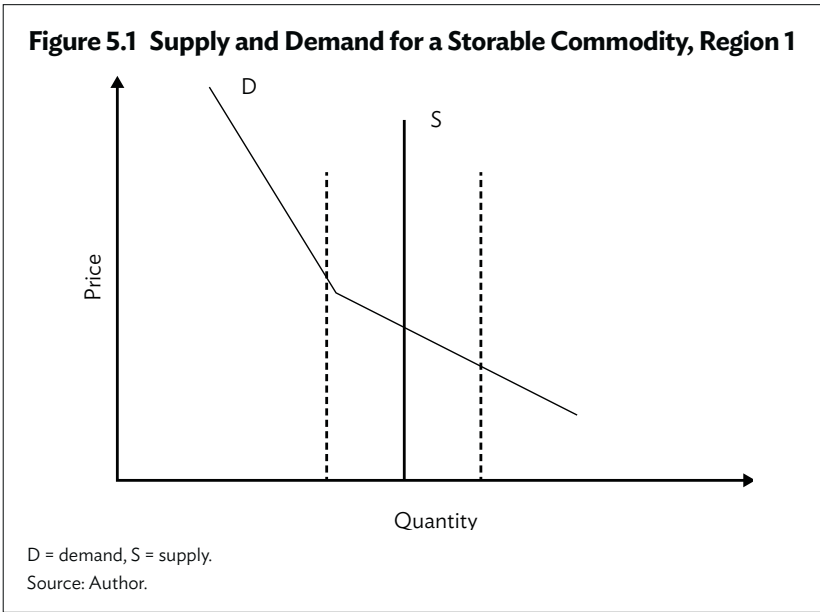
The income transfer policy increases demand for food in the country by transferring income from the rich, whose marginal propensity to consume food is almost certainly below that of the poor, to the poor, who are likely to spend much more of this money on food. The price insulation policy generates these two partially offsetting impacts, but adds to this a substitution effect that increases the demand for food by both rich and poor. Given the homogeneity of degree zero of the Marshallian demand function, the price elasticity of demand for food must be greater (in absolute value) than the income elasticity by the sum of the cross-price elasticities (assuming gross substitutability). If we consider only the poor person, the increase in demand due to the substitution effect must be larger than that due to the income effect. The price insulation policy removes the negative income effect to the rich of having to pay for the transfer, and adds a substitution effect for the rich. The only uncertainty relates to the income effects of the price insulation measure. If, for instance, insulation is achieved through an import subsidy or a reduction in import duties that reduces revenues, the need to finance this intervention will reduce food demand.

### **Impacts on Food Price Volatility**

Another important impact of trade pertains to production diversification and the consequent reduction in costs associated with output volatility. To illustrate this, it is useful to begin with a small, isolated economy producing and consuming a storable food commodity. A highly simplified version of the model developed by Deaton and Laroque (1992) and Cafiero et al. (2011) is represented in Figure 5.1. A vertical curve marked *S* represents food availability. The position of this curve is determined by the carry-in of food from the previous season, plus production for this marketing season. This curve is vertical, reflecting the assumption that output cannot adjust to price changes during the season.

Because food production is typically much more volatile than consumer demand, we focus on this source of variability. The dashed lines to the left and right of the supply curve by one standard deviation of the output distribution give an idea of the dispersion. The demand curve, marked *D*, consists of two regions. The first, steeper section of the curve reflects a stockout situation in which high prices lead speculators to believe that it will not be profitable enough to store food into the next period and so sell all of their supplies. In this situation, the only way that demand can meet changes in availability is by causing consumers to eat less. Because consumer demand for food tends to exhibit little





response to price changes, large price changes are required to reduce consumption to match availability.

The section of the demand curve below the kink reflects a situation where storers believe it will be profitable to carry food into the next season, and hence continue to hold stocks. Whenever availability intersects the demand curve below the kink, food prices need to vary relatively little when there are unexpected changes. This is because the demand for storage is much more price responsive than the demand for consumption. The situation for non-storable foods is the same except that the entire demand curve looks like the steeper curve in Figure 5.1.

If we move from a single, isolated market to one with many supplying and demanding regions linked by low-cost transport, a key change is that the coefficient of variation of output is likely to come down substantially. If we further consider a move from a single, isolated region with a coefficient of variation of output of  $\sigma$  to  $n$  integrated regions with identical but independently distributed output linked by low cost transport, then the coefficient of variation for output will decline to  $\sigma/\sqrt{n}$ . With, for instance, nine regions, the coefficient of variation falls by a factor of three under these circumstances, greatly reducing the frequency with which unexpected output falls will result in price spikes.

Obviously, if there is some correlation between output in the regions linked by transport, the variance reduction will be somewhat smaller, but the general principle that diversification reduces the risk of income volatility from a given production portfolio remains.

Food security diversification can be very powerful. Burgess and Donaldson (2010) find that connecting a district in India to the railway network resulted in a very sharp decline—almost the disappearance—of famines in that region. Interregional trade in this context was particularly important because, as Donaldson (2014) explains, agricultural output volatility was large and internal transport costs extremely high prior to connection. However, this work illustrates the role of trade in reducing the volatility of food prices and the risk of food insecurity. Ravallion (1987) considered the role of international trade in famines in British India, and concluded that it had a modestly favorable impact on reducing the consumption impact of output shocks, an effect complemented by domestic storage. He found no evidence of “slump famines” in which the income decline associated with harvest failure reduces consumption enough to increase exports.

A crude indication of the importance of *international* diversification in reducing food price volatility builds on the extent to which it addresses production risk, which, in turn, depends on the production distribution across countries for a particular commodity. For rice, for example, the Food and Agriculture Organization (FAO) of the United Nations reports production in 117 countries in 2013. The enormous variation in the size of these countries requires taking the international output distribution into account. One simple way to do this is to use the numbers equivalent of the Herfindahl Index, defined as the inverse of the sum of their market shares squared. For rice in 2013, this index was 6.8. This implies that international diversification reduces the production variance by a factor of 6.8 and the average size of rice market price shocks by a factor of 2.6. Wheat production is more widely distributed geographically, with a numbers equivalent corresponding to 13.8 equal-sized countries in 2013. This implies that international diversification reduces the variance of price shocks associated with production shocks by a factor of 13.8 and the average size of the price shocks resulting from production shocks by a factor of 3.7.

Consideration of international diversification in production has important policy implications. Severe price shocks are an inherent feature of isolated economies and can be greatly mitigated by the interregional and international diversification of production associated with trade openness. Opening up to trade does not—as depicted in G-33 (2010)—result in increased exposure to price shocks. Unfortunately, as we will see later in this chapter, there is a risk that trade policy

interventions designed to protect individual countries from price shocks will, because of their beggar-thy-neighbor impacts, end up destabilizing world prices and compromising the ability of trade to reduce volatility, forcing each country to respond in the same way.

### Dietary Diversity and Quality

Trade has considerable potential to improve food diversity and quality, particularly in countries that are small and are agro-ecological monocultures. This advantage is likely to be exploited most by higher-income countries, where people have the spending power to diversify their diets. If people are very poor, they will likely focus heavily on starchy staples (Masters et al. 2016).

Remans et al. (2014) point to sharp differences between the nutritional diversity of production and the food supply in many regions. This is particularly evident for their measure of the functional diversity of food, which rises very substantially, even for regions not very open to trade, when refocusing from food production to access. This presumably reflects a combination of imports of products in which regions lack a comparative advantage, such as vegetable oils in South Asia, and exports of commodities in which regions have a strong comparative advantage, such as beverages in sub-Saharan Africa. The share of calories from non-staples in production and consumption is much less divergent in developing-country regions and appears more related to income level. Only in high-income regions such as Europe and North America are sharp differences observed.

**Table 5.2 Differences between Nutritional Diversity in Production and in the Food Supply**

	Nutritional Composition		Energy from Non-Staples	
	Production	Supply	Production	Supply
South Asia	0.13	0.71	40	43
East Asia and the Pacific	0.12	0.71	47	44
Sub-Saharan Africa	0.05	0.71	32	34
Middle East and North Africa	0.08	0.82	47	46
Europe and Central Asia	0.08	0.80	21	52
North America	0.44	0.94	11	66
Latin America and Caribbean	0.08	0.80	57	55

Source: Remans et al. (2014, Table 1).

The link between openness to trade and food quality is much more controversial. One would expect the higher incomes associated with trade to result in dietary improvements—assuming consumers are knowledgeable about what foods lead to better nutritional outcomes. But many have raised concerns about the role of trade, and globalization more generally, in creating nutritional problems, particularly those associated with obesity (Hawkes, Chopra, and Frielin 2009).

One strand of this literature (and related media discussion) focuses on the case of Pacific island countries (e.g., Gittelsohn et al. 2003; Cassels 2006; Watson and Treanor 2016). This literature frequently involves claims that the pre-contact diet in these countries was a healthy mix of carbohydrates from root crops with proteins from tropical fish. The experience of Easter Island and New Zealand (Flannery 1994) raises questions about the sustainability of such diets, particularly after the dramatic population growth likely during the demographic transition. Articles frequently raise concerns about the poor health outcomes associated with imported foods such as mutton flaps and turkey tails, and frequently advocate banning particular foods. The concerns about obesity rates, diabetes, and other health concerns are indeed disturbing. Evans et al. (2001) conclude that simply providing nutrition information may not be enough to change diets, and advocate using trade policies. But trade policy is clearly an indirect and inefficient means of improving these diets.

Thow et al. (2011), in perhaps the most detailed discussion of trade policies in this literature, raise concerns that protection to domestic meat production in some countries has reduced production of traditional foods, but advocate trade policy to remedy this by restricting imports of less healthy foods. This set of prescriptions, together with the evidence from past protection policies, reveals the problem of using indirect trade measures to achieve nutritional goals. Discouragement of unhealthy imports is likely to increase domestic production of this type of product, while protection of “healthy” domestic products will reduce consumption by raising their price. By contrast, the use of excise taxes—which they also recommend—has the ability to reduce demand for unhealthy products without increasing domestic production.

Changing diets to deal with malnutrition, and particularly the problems associated with excessive intake of refined foods, sugar, and fat, is particularly challenging. To some degree, disseminating appropriate information is surely part of a good policy response. This may, however, not always be enough, and taxation or behavioral economic approaches may be needed to change outcomes. In this situation, Okrent and Alston (2012) provide a framework for evaluating alternative price-based policies, concluding that, within the range of feasible measures,

a uniform tax on calories would be much more efficient than indirect approaches. Just and Gabrielyan (2016) emphasized the importance of behavioral considerations and points to considerable promise of “nudges” and other policies in influencing food choices.

### **5.1.2 Trade Policy and Food Security**

Trade policy may have important impacts on achieving the SDGs. The outcome depends heavily upon each country’s trade policies and their interaction when the associated collective action problems are considered. This section first considers the impacts of protection changes, then turns to dynamic behavior currently used to stabilize domestic prices. Finally, it reviews the potential impacts of the proposed SSM, whose negotiation was endorsed at a recent WTO ministerial meeting in Nairobi.

The simplest form of trade policy, and the one strongly favored by the WTO, is ad valorem tariffs, which allow countries to protect particular commodities without changing relative prices over time, and without interfering with the price-stabilizing consequences of the production-source diversification associated with trade openness. One question for trade policy, addressed very briefly here because it is the subject of another chapter in this volume, is the implications of reducing the ad valorem protection for poverty. Following this, the discussion turns to policies that affect protection measure variance.

#### **Changing the Level of Protection**

Considering the impacts of protection-level changes mandates beginning with information about agricultural support. Some discussions, such as McMichael (2014), begin from the perspective that agricultural protection was reduced in the 1980s and 1990s when many marketing boards were abolished or restructured. In fact, the average rate of protection to developing-country agriculture in the 1980s was strongly negative. During this period, taxation was sharply reduced and developing countries have now moved to an average rate of assistance that is positive (Anderson 2009).

There is certainly a risk that changes in trade policy, even if they increase national income, could reduce the incomes of some groups. A key question is whether this is likely to be widespread. If one accepts the evidence that higher agricultural prices tend to reduce long-term poverty (Jacoby 2015; Ivanic and Martin 2014b), then poor people in countries that protect agriculture might be vulnerable. Since agricultural protection raises production costs and lowers the prices received for exports, it is likely that poverty would fall in export-oriented developing countries, particularly those where agricultural land is broadly

distributed. Countries such as Cambodia and Viet Nam, in particular, appear to be examples where higher food prices lower poverty in both the short and the long run (Ivanic and Martin 2014b). If, as in Lederman and Porto's 2016 example of Mexico, higher food prices make the poor worse off, then lower protection would lower poverty in importing countries. Overall, the available literature appears to conclude that agricultural liberalization would, on balance, lower poverty (Anderson, Cockburn, and Martin 2010), but some complementary measures for particular groups are likely needed.

A paper by Olper, Curzi, and Swinnen (2017) examined the link between trade liberalization, health, and, more specifically, child mortality over the period 1960 to 2010. Using a synthetic control method, they find that child health outcomes improved following overall trade liberalization in 19 of their sample countries, did not change significantly in 19, and deteriorated in 3 countries. At the beginning of their sample period, almost all developing countries taxed their agriculture sectors, and subsequent rate reductions resulted in particularly large improvements in child health outcomes.

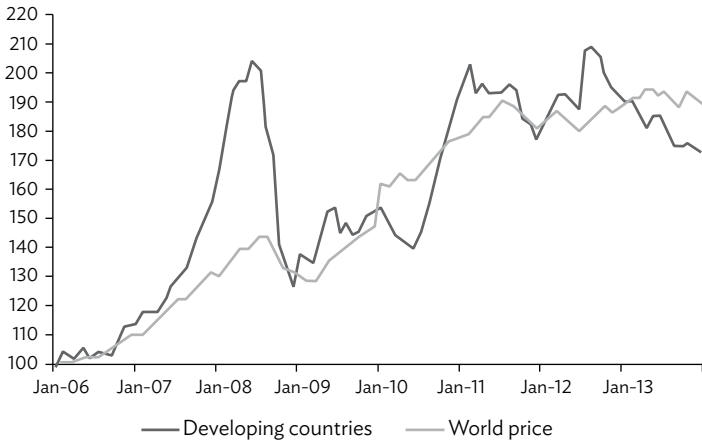
In fact, it appears that most countries, and particularly developing countries, seek to insulate their markets from the price shocks. In contrast with *ad valorem* tariffs, this can affect the ability of countries to benefit from the stabilizing consequences of production diversification. Further, as we will see, the impact of this policy on prices depends heavily upon the interaction with other countries' policies.

### **Price Insulation**

Policy makers in developing countries are very sensitive to changes in food prices, and frequently adjust trade policies in response to changes in the world market. To gain insights into this, we draw on Ivanic and Martin (2014a), who analyze the response of domestic prices to changes in world prices. A comparison of movements in the World Bank's food price index for internationally traded foods with movements in a weighted average of the FAO's domestic food consumer price indexes reveals two striking features (Figure 5.2). One is that when international prices increased rapidly, policy makers in developing countries almost fully insulated their domestic markets. The other feature is that the longer-term trends in the two series are almost identical.

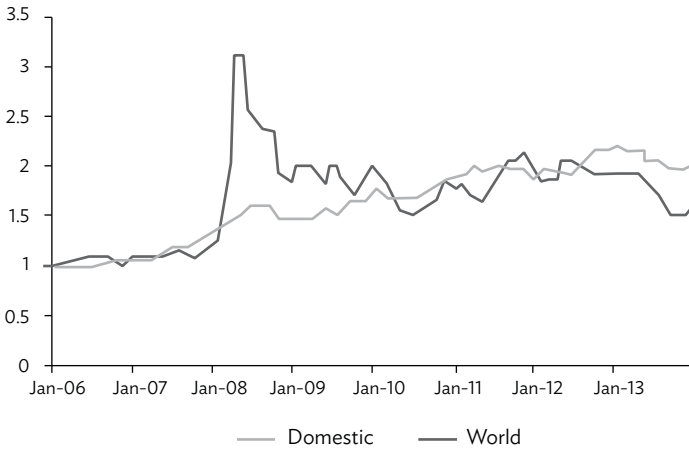
The prices of individual staple foods over the same period reveal that this behavior is particularly clear for both rice and wheat (Figures 5.3 and 5.4). By contrast, there is much less insulation of domestic markets for soybean, which is a major input into livestock feed, but a minor expenditure by the poor (Figure 5.5). In all cases, however, there appears to be transmission of the longer-term trend in international prices to the

**Figure 5.2 Indexes of Staple Food Prices (%)**



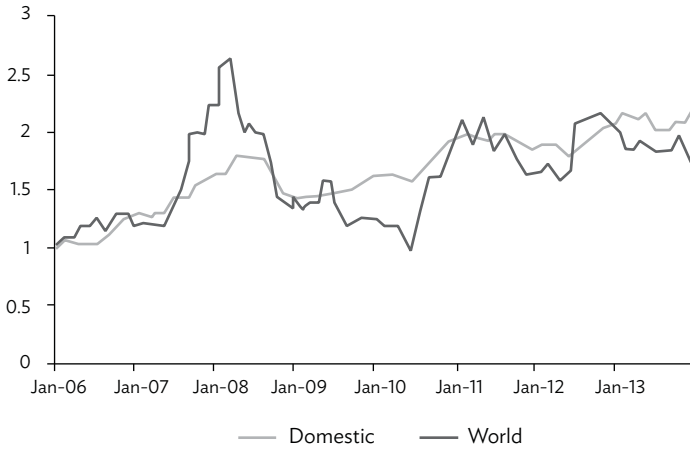
Source: Based on data from World Bank (2015) and Food and Agriculture Organization (2015).

**Figure 5.3 Price Insulation for Rice**



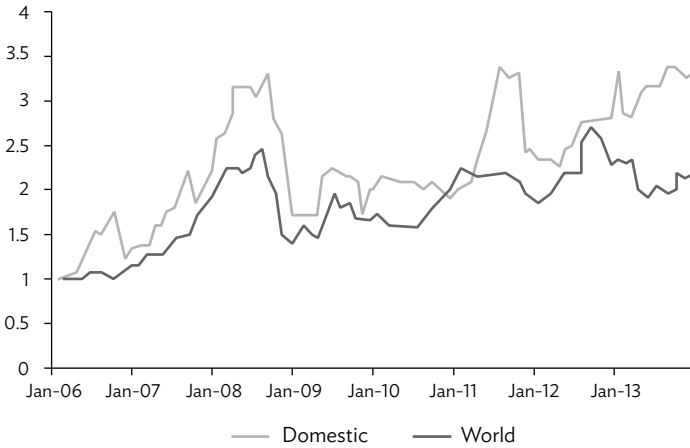
Source: Based on data from World Bank (2015) and Food and Agriculture Organization (2015).

**Figure 5.4 Price Insulation for Wheat**



Source: Based on data from World Bank (2015) and Food and Agriculture Organization (2015).

**Figure 5.5 Price Insulation for Soybeans**



Source: Based on data from World Bank (2015) and Food and Agriculture Organization (2015).



domestic market. This implies that countries return to their long-term trend level of taxation or support following shocks to world prices.

Ivanic and Martin (2014a) estimate the relationship between protection levels and world prices using the model:

$$\Delta\tau = \alpha \cdot (p_t^w - p_{t-1}^w) + \beta \cdot (\tau_{t-1} - \tau_{t-1}^\circ) \tag{1}$$

where  $\tau$  is the log of the rate of protection defined as  $(1+t)$  where  $t$  is the tariff equivalent of protection provided at a country’s border;  $p^w$  is the log of the world price;  $\tau^\circ$  is the log of the rate of protection desired in the absence of changes in world prices;  $\alpha$  is the insulation coefficient, indicating the extent to which protection is used to offset the effects of changes in world prices; and  $\beta$  is the error-correction coefficient indicating the extent to which policy makers adjust protection in response to yearly gaps. Both  $\alpha$  and  $\beta$  should be less than unity in absolute value or the system will be unstable, with any initial deviation causing explosive deviations from equilibrium.

Key findings from the analysis by Ivanic and Martin (2014a) are (i) that insulation is partial, with average trade-weighted coefficients of insulation all substantially less than minus one in absolute value (Table 3); and (ii) that the magnitude of insulation is larger for rice and wheat, and for politically sensitive products such as sugar, than for soybeans, (yellow) maize, and beef.

An important question is why policy makers might respond like this. The inverse relationship between food price levels and protection rates has been long observed (Johnson 1973), but the latter’s tendency to return to their long-run level appears not to have received the same degree of attention in the literature. One possible explanation for this behavior

**Table 5.3 Error Correction Coefficients, Simple Averages**

	$\alpha$	$\beta$
Rice	-0.50	-0.36
Wheat	-0.52	-0.31
Sugar	-0.53	-0.20
Maize	-0.35	-0.44
Soybeans	-0.40	-0.46
Beef	-0.39	-0.31
Poultry	-0.34	-0.46

Source: Author.

is provided by recent work on the implications of food price changes for poverty, especially in the context of the surges that can have such dramatic effects because the poor spend a large fraction of their income on food. This body of work (e.g., Headey 2014; Ivanic and Martin 2008) shows that unanticipated food price increases can have serious, adverse impacts for poverty (although Headey and Martin [2016] are concerned about the reliability of evidence on the net purchasing position of poor households), while sustained increases in prices might be helpful once poor farmers' marketable output has a chance to expand and higher food prices are passed through into wage rates (Ivanic and Martin 2014b; Jacoby 2015). Seen this way, it seems likely that the observed policy responses make political sense for each individual country.

However, it must be remembered that the results discussed are average responses by a wide range of developing countries, which account for the vast majority of world agricultural production. This means that much of the insulation that appears so effective to individual country policy makers is actually undone by the intervention's offsetting change in world agricultural prices. While it can stabilize the internal price in the region using it, it does this by destabilizing the price in other markets. As shown in Anderson, Martin, and Ivanic (2016), the impact of this is to raise the world price by a weighted average of the degree of insulation in all markets. If the world price rises by \$50 and each importer offsets half of this increase by reducing its tariff by \$25 and each exporter by adding an export tax of \$25, then the effect will be to raise the world price by \$25, leaving all domestic prices unchanged. If all countries attempt to completely stabilize their domestic prices, as under the European Union's (EU) variable import levy system (Sampson and Snape 1980), the market for that product becomes unstable. A \$50 rise in the world price would cause each country to reduce its border protection by \$50, causing another \$50 rise in the world price, triggering another \$50 decline in border measures, causing another \$50 rise in the world price.

On average, price insulation is completely ineffective in stabilizing domestic prices. All it can ever achieve is to redistribute volatility, with the countries that insulate more than the average, transferring some of the volatility they would have faced to other countries. This creates a collective action problem. Even if all countries recognize the problem, there is an incentive for each to use this approach.

A key problem is that such intervention is contagious. Once some countries insulate and the volatility of world prices increases, other countries feel compelled to protect themselves. As noted by Martin and Anderson (2012), the problem is analogous to that facing members of a football crowd. Once some members of the crowd stand to get a better view, others are forced to stand if they are not to lose their view. Since

some members of the crowd are shorter than others, many will likely end up with a worse view. Returning to the real-world problem of volatile food prices, the countries that are likely to draw the short stick—and be unable to fully offset the impacts of higher prices—include many net food importers, who frequently have low initial tariffs and insufficient fiscal resources to pay import subsidies when world prices rise.

One possible satisfactory price insulation outcome might be to export volatility from poor countries to rich ones, where consumers spend much smaller shares of their incomes on food, and producers have more options for dealing with price volatility. One challenge for this is the very small and declining shares of rich countries in many food markets. In rice, for example, the countries self-designated as developed in agriculture accounted for only 2.5% of world rice production in 2013. They do account for a larger share of the world wheat market at 30%. Historically, of course, it was the rich countries that were the worst users of price insulation, with the EU's variable import levy perhaps the most famous case. Fortunately, the Uruguay Round outlawed the use of variable import levies and European policy has since been reformed to remove this beggar-thy-neighbor policy.

Another possible satisfactory price insulation scenario might be one where countries whose poor are most vulnerable to price increases exported positive price shocks to countries where the poor are less vulnerable. This need not necessarily be a transfer from the poorer to the richer countries. Some relatively low-income countries with abundant and widely distributed land holdings, and many poor farmers who are net sellers of food, might be expected to welcome price increases. In fact, countries like Viet Nam, where higher food prices generally appear to reduce poverty, countered higher prices with export restrictions during the 2006–2008 food price crisis. When Anderson, Ivanic, and Martin (2014) reviewed the countries' responses to this crisis, they found that these policies were ineffective in reducing global poverty. The countries that insulated more than the average transferred the price increase to those who insulated less, but the reductions in poverty in the first were offset by increases in the second. When each country's intervention was considered in isolation, however, it appeared that these actions were effective. This is, of course, only one case study, and there might be other cases in which price insulation is marginally effective. However, it seems clear that such insulation is almost always going to be much less effective than it appears to each individual observer.

### **The Proposed Special Safeguard Mechanism**

The Nairobi Ministerial Declaration (WTO 2015) provides for an SSM to be negotiated consistent with the Hong Kong, China Ministerial decision

(WTO 2005), which provides for temporary quantity and price-based measures. While this negotiating mandate does not require that the negotiated SSM should be based on the Doha Proposal (WTO 2008a,b), the discussion is likely to return to that proposal. Proponents of this mechanism see it as essential for food and livelihood security, and for addressing the “incessant price fluctuations” believed to be associated with openness to international markets (G-33, 2010: 2).

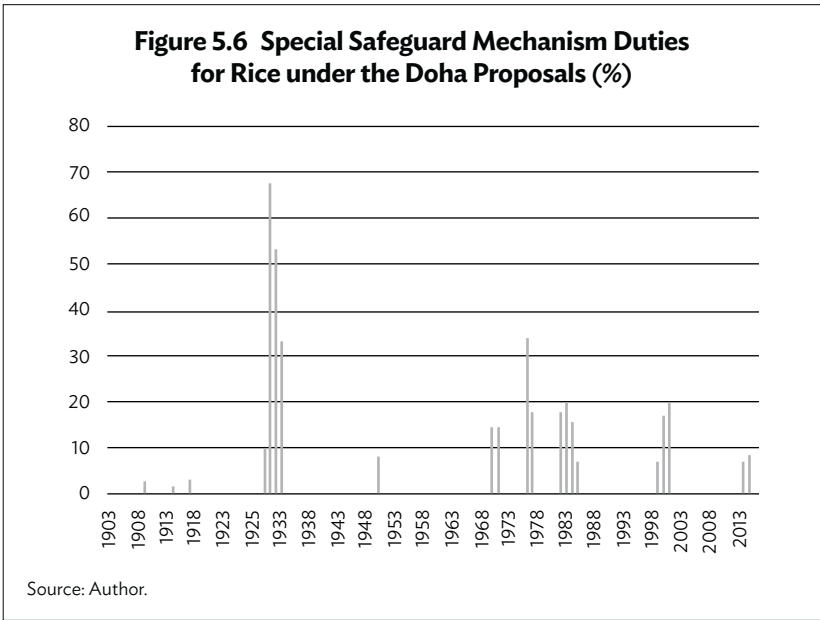
In assessing proposed trade rules such as this, it is important to consider both the direct impact on the using countries, and the indirect impact on those countries through the market. Many studies, such as Valdés and Foster (2005) and Montemayor (2010), miss the second impact by considering only the impact on individual countries applying the safeguard. However, if a price-based safeguard policy becomes available to all WTO developing countries, it will be available on 77% of world agricultural production and over 97% for key food products such as rice (Fukase and Martin 2016). In this context, the beggar-thy-neighbor implications of this form of price insulation must be considered. Fortunately, a number of studies that do take this into account are now available. See, for example, Grant and Meilke (2009, 2010) and Hertel, Martin, and Leister (2010).

This has practical impacts in framing a safeguard rule. If a sharp price decline led many developing countries to impose safeguards, then the combined effect would be to magnify that decline. If, for instance, under the Doha Proposal, an initial shock to world rice supplies caused prices to fall 10% below the trigger, then all developing countries would be eligible to impose an 8.5% duty to offset this decline. If both importers and exporters responded in this way, this would push world prices down by a further 8%, potentially setting in motion a second round of duty increases designed to offset the now 18% decline in prices. Clearly, the collective action problem associated with this measure’s widespread use needs to be taken into account in considering global trade rules. Though a minister using a safeguard might only consider its direct impact, doing so is totally misleading when framing rules for global trade, whose role is to take into account interactions between countries.

Because the issues and questions involved in designing both a price- and a quantity-based safeguard differ sharply, it makes sense to consider them in sequence, with the price-based measure considered first.

### **The Price-Based Safeguard**

Three key parameters in a price-based safeguard are (i) the trigger level below which countries may respond to a price decline; (ii) the insulation coefficient or extent to which a duty may be used to offset a price decline; and (iii) whether prices are shipment-by-shipment or based on a market aggregate.



### The Trigger Level

The 2008 draft Modalities involved a trigger equal to 85% of a 3-year moving average of prices. The frequency with which such a trigger will allow duties to be imposed depends on a product’s ability to weather supply shocks, with storable products such as rice and wheat being less frequent, and non-storable products, where supply shocks frequently result in severe price drops, being more frequent.

To assess the frequency with which such a measure would be triggered, it is worth examining a long period of prices, such as the Grilli–Yang price series since 1901. A quick calculation using rice prices since 1901 suggests that, had the SSM been in effect, it would have been triggered in 20% of years. Figure 5.6 shows the years and the duty rates calculated without taking into account the depressing impact of the duties on world prices. What is clear is that the duty would have been triggered in a number of episodes of sharp price declines, such as 1931–1934, 1976–1977, 1982–1985, and 2014–2015.

A key problem with the 3-year average as a basis for a trigger is its arbitrariness. While the econometric evidence discussed in the previous section indicates that policy makers adjust toward the long-run trend of the world price as well as resisting short-run shocks, they do not do so at the same rate as a 3-year average. For this reason, Montemayor

(2010) and Finger (2009) find that the SSM proposal frequently does not trigger measures when it would be needed to preserve the observed domestic price, and vice versa.

### **The Insulation Coefficient**

Although the insulation coefficient of 0.85 under the Doha SSM Proposals would allow substantial duties to be applied in periods of severe market stress, such as 1931–1934 and 1976–1977, this would not be the end of the matter. Because the SSM permits only importers to insulate, the second-round fall in the world price associated with these duties would likely be roughly half the duty rate. But this fall would provide scope for a second-round increase in the duties as world prices fell further below the trigger. Just as in 2008, when export restrictions and import duty reductions/import subsidies caused a cumulative increase in world prices, until many felt the market to be “on fire” (Slayton 2009), cumulatively increasing duties could turn panic into rout as world prices fell and continued to fall.

Cumulatively falling prices and rising duties is a particular problem with a coefficient of insulation as high as 0.85. A rate so close to 1 leads to enormous magnification of world price volatility. A key problem with price insulation is that every individual policy maker knows that volatility can only be reduced at the expense of other countries. This collective action problem—like the trivial example of standing up in the grandstand—would put pressure on policy makers to use the maximum allowed degree of insulation of 0.85, even if they would have individually been happy with something smaller. Such a high coefficient of insulation has very adverse consequences for exporting countries, as well as the net selling farmers within them, by creating risks of extremely depressed prices persisting for extended periods.

From the previous section, it appears that policy makers not subject to not any constraint, insulate against only half of a change in world prices of wheat, rice, and sugar, and closer to a third for less sensitive products like soybeans and maize. This suggests that having such a high coefficient of insulation as 0.85 does not appear to be necessary even for individual policy makers. Given that WTO rules are intended to manage and reduce, rather than exacerbate, collective action problems, it is extremely important to have a lower coefficient of insulation than 0.85. A coefficient of insulation of 0.5, for instance, would allow policy makers to do what they have done historically in reducing price shocks inside their markets, while greatly reducing the adverse impacts on world markets. Focusing attention on this measure would also help policy makers realize the collective action problems associated with this type of intervention. Once policy makers became accustomed to

the role of a lower coefficient of insulation in mitigating price shocks, it might be possible to negotiate a collective agreement. The price-based SSM might serve an important function by building recognition of this parameter, which is the price volatility negotiation counterpart of the tariff binding in price level negotiations.

### **Market Prices vs. Shipment by Shipment**

The draft Modalities (WTO 2008a) specify that a price-based safeguard should be based on the price of each individual shipment. As Sampson and Snape (1980) noted, such a policy creates incentives for collusion and corruption. The exporter and the importer have an incentive to over-invoice any shipment so that it will have a price above the trigger and hence not incur the duty. Incentives for corruption of this type are inherently undesirable. Further, they threaten policy effectiveness by creating a situation in which duties are not collected even when the market price is below the trigger.

To the extent that such a policy can be made to operate as intended, another disadvantage is that it discriminates against lower-priced imports, which may be particularly important in the diet of the poor. While the trigger price is based on an average price over 3 years, the shipment-by-shipment approach compares this average with the price of a particular shipment. As noted by Gibson and Kim (2012) rice that has attributes like desirable color, fragrance, and stickiness commands a premium of 45% in Viet Nam over rice that is just as nutritious. Given these large differentials, a shipment-by-shipment approach would lead an SSM to be triggered more or less continuously for low-priced, but nutritious foods likely to be favored by the poor.

Another concern with the shipment-by-shipment approach is that it tends to discriminate against developing country exports. Finger (2009: 34) examined imports of 25 different agricultural products into six large developing countries and found that variations in unit prices across suppliers would trigger duties in at least one country on 59% of tariff lines, even without any variation in prices over time. Almost two-thirds of these duties would be imposed against exports from developing countries. The continuous triggering of the price-based special agricultural safeguards (SSG) noted by Hallaert (2005) likely results from its use of a shipment-by-shipment approach.

It seems clear that the import price used to trigger any price-based SSM should be based on an average that is, as closely as possible, comparable with that used to calculate the trigger. As in the case of the EU variable levies, an average import price might be used. Alternatively, price changes and triggers might be calculated based on the market

price for the primary variety of the good in a major supplying market—such as, for example, Thai 5% broken price for rice or the Randfontein maize export price. This is important partly to avoid incentives to misrepresent import prices, partly to avoid discriminating against foods favored by the poor, and partly to avoid discriminating against exports from developing countries.

### **Quantity-Based Safeguards**

The quantity-based SSM (Q-SSM) is based on the volume-based SSG introduced in the Uruguay Round. The Doha Proposal (WTO 2008ab) involves a trigger based on a 3-year moving average of imports, with duties up to the higher of 50 percentage points, or 50% of the bound rate. It would be challenging to administer because it requires keeping track of imports through the marketing year, but can only be imposed once the trigger has been reached. Importers cannot impose a Q-SSM at the same time as a price-based measure, and must remove it after a year. So it seems unlikely that a quantity-based measure would be used when a price-based measure is available.

Any increase in imports when their prices have not fallen must be caused by some change in the domestic market. In agriculture, the most likely such domestic market disturbance is a poor harvest. Given the lack of an injury test, the Q-SSM can be applied even in this situation. The South Centre (2009) concludes that more than 85% of import surges are not accompanied by declines in prices, suggesting that most are driven by domestic shocks, such as declines in domestic production. In a high-income country, the imposition of a duty in this situation has potentially strong political support. Farmers' incomes are reduced by the decline in output and they can be compensated to some degree by a higher price. However, the situation is completely different in most low-income developing countries, where most poor farmers are close to subsistence and many are net buyers of food. During a drought, many are likely to be bigger-than-usual net buyers of food. Ivanic and Martin (2014c) find that, for this reason, use of the Q-SSM as proposed would increase, rather than reduce, poverty.

The Q-SSM also has the undesirable consequence of increasing the overall volatility of consumer prices by raising the domestic prices of imported goods unnecessarily when import prices are stable. By closing markets to agricultural exporters, which are now primarily developing countries, it would also increase the volatility of export returns. The measure would also likely create within-season volatility and disorder in the market planning to use this measure. If market participants felt that the trigger was likely during the marketing year, there would be



a strong incentive to bring forward imports so that they could occur before it was breached.

The SSM proposal in the Doha negotiations (WTO 2008a) would allow the duty increases associated with the SSM to be large indeed. The maximum duty allowed is related to the percentage increase in imports relative to a 3-year average of imports, with 50% of the bound tariff, or 50 percentage points, permitted when imports exceed 135% of this average. Such a duty could be very large, with bound tariffs frequently in the order of 150%, and applied rates much lower in developing countries, where increases in applied rates of over 100 percentage points would frequently be permitted. If imports were initially small, these duties could be triggered by increases in imports that were quite small as a share of consumption. If, for instance, initial imports were 5% of consumption, the initial applied rate 10%, and the bound rate 150%, an increase in imports of less than 2% of consumption would allow an increase in duties of 215 percentage points.

The duty is permitted, but not required, and one possibility is that policy makers might not impose the maximum duties in situations such as this when imports are actually stabilizing the market by compensating for a harvest shortfall. However, lobby groups of net selling producers, who are typically much better organized than poor net buyers of food, would likely pressure governments to use the rights provided to them by the WTO, and it seems likely that this pressure would become intolerable on a reasonably large number of occasions. Frequently, governments are unaware of the true supply situation and might be panicked by an apparently irrational surge of imports. The famines surveyed by Sen (1981) almost all occurred in cases where imports were restricted based on perceptions of adequate food supply.

It seems difficult to see how the Q-SSM could be adapted to contribute to improving the food and livelihood security of the poor in developing countries. A case might have been made that the SSG introduced for developed countries in the Uruguay Round would compensate farmers for poor harvests by raising the prices they receive. But it is dangerous to transfer such a measure to the radically different situation of developing countries, where many poor farmers are net buyers of food, and many more may become so during times of output decline and consequent import increases. While such a measure would raise farm incomes in developed countries, where farmers are almost always net sellers of food, this measure would likely reduce food security in developing countries by raising prices when poor consumers, and even poor farmers, are at their most vulnerable.

## Conclusions

Achieving Sustainable Development Goal 2, which focuses on eliminating hunger by 2030, will be a challenge. Taking advantage of the opportunities created by trade is essential if this is even to be contemplated. Examining the differences in endowments between countries shows the difficulty involved in the absence of trade in agricultural products. Some agricultural exporters, such as Brazil and the US, have twice the world average endowments of agricultural land per person, while key agricultural importers such as Japan and the Republic of Korea have only one-tenth of the average amount of agricultural land. Clearly, some agricultural trade is needed to deal with the vastly different endowments of land resulting from geographic accidents. In addition to the simple differences in land availability, there is also considerable heterogeneity within each country's agriculture, which creates opportunities for income gains from trade both within and between countries.

Trade in agricultural inputs such as seeds also has important potential to raise productivity. However, there is an important role for government in ensuring the quality of the goods is as described. Recent work suggests that poor quality of the available inputs is one reason why farmers in some African countries are (correctly) reluctant to adopt improved inputs. This can have serious adverse impacts on agricultural productivity growth, which is unfortunate because this is a potentially a powerful poverty reduction force.

When considering the impacts of trade reform for nutritional outcomes, it is particularly important to take into account substitution effects as well as income effects. A food price rise that lowers the real incomes of a vulnerable group such as wage workers will have an additional substitution effect on consumption of the affected goods and may, for that reason, have a larger than anticipated impact on nutrition. This difference is also very important when considering the impacts on world food prices of trade measures such as export taxes.

Trade can generally be expected to increase dietary diversity, and there is evidence that this is the case, particularly in the higher-income countries. But many have raised concerns that consumers, particularly in Pacific island countries, may choose fatty and high-sugar foods. In general, providing information about the health implications of such foods seems an important step. Indirect policy measures such as protection are likely to create collateral damage, such as expanding local production of undesired foods and reducing domestic consumption of favored, locally produced foods. Where policy makers wish to change

nutritional outcomes, it is generally preferable to work with policy instruments such as excise taxes or “nudges” that directly affect the desired outcomes.

Reducing the level of agricultural protection from today’s levels seems likely to reduce poverty rates and to improve nutritional outcomes. This is because it would lower the overall cost of producing food and raise returns in food-exporting developing countries where there are frequently large numbers of net selling low-income farmers. However, like all policies that work through changes in food prices, there would likely be both winners and losers, necessitating measures to compensate poor and vulnerable people disadvantaged by the change.

Policies that seek to stabilize domestic prices relative to world market prices are very widely used in developing countries. While these frequently seem very effective in protecting people in individual countries from price shocks, it must be remembered that this is a beggar-thy-neighbor situation that cannot stabilize prices overall, but merely transfer volatility from one country to another. Only the countries that insulate more than the average can stabilize their domestic prices. This creates an unfortunate dynamic leading to excessive insulation and greater volatility in world market prices.

The SSM currently under discussion at the WTO raises a number of concerns. The price-based proposal previously discussed in the Doha negotiations would allow an extraordinary degree of price insulation (85%), would likely be triggered during sharp downturns in world prices, and would greatly intensify them if used extensively. The quantity-based proposal would also increase the volatility of world prices. But the greatest concern with this measure would lie in its impact on domestic markets where it would likely be triggered during years of domestic supply disturbances and could sharply increase and destabilize food prices, creating potentially serious food security risks for the poor.

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\* The Asian Development Bank refers to “China” as the People’s Republic of China and to “Vietnam” as Viet Nam.

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# 6

## Trade and Women

*Ben Shepherd and Susan Stone*

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### 6.1 Introduction

Achieving gender equality is an important part of the 2030 Sustainable Development Goals (SDGs). Specifically, Goal 5 commits countries to achieve gender equality and empower all women and girls. It is entirely appropriate to give gender equality and the redressing of historical and present discrimination high billing in the SDGs as women play a central role in economic and social development. This chapter examines trade as a means of economic empowerment for women in a developing economy context. This perspective attempts to identify the scope for trade to contribute to positive outcomes for women, as well as gain an understanding of cases in which the opposite might be true, and the kinds of complementary policies that—together with trade policy—can help promote gender equality.

The problem of gender inequality in the workplace is a well-established phenomenon (see OECD [2012] for a recent review). The disparity runs across issues ranging from job choice to access to, and control over, resources (notably credit), information, and technologies (IANWGE 2011). These affect both developed and developing economies. Levels of ownership, employment, and wages are all lower for women (OECD 2012). According to the International Labour Organization (ILO 2010), out of the 3 billion people employed in 2008, 1.2 billion (40.4%) were women. Over the past 20 years, the labor force participation rate for women has declined slightly, leading to a decline in employment opportunities across the board (ILO 2016). In that time, women have gravitated away from agriculture and moved overwhelmingly into services. In 1995, approximately 42% of working women were in agriculture. In 2015, that had fallen to 25%, with East Asia experiencing the largest decline of more than 30 percentage points (ILO 2016). Agriculture's share in men's employment fell as well. However, while women went into services, men moved to both

industry and services. The share of women employed in services increased from just over 40% in 1995, to well over 60% in 2015.

These statistics imply much about the opportunities afforded to women through trade liberalization and access to international markets. Given the large increase in the share of intermediates trade in the past 20 years, the downward trend in the share of female employment in industry does not imply that women gain from these expanding trade opportunities. There has also been concern that women's gains from trade liberalization are reversed as countries upgrade their industries to higher value-added and more technologically sophisticated production. This observation has been caused by the share of women in employment having declined in these industries as they become more sophisticated (Nordås 2003). However, at the same time, the wage gap between men and women in the economy as a whole has narrowed in the East Asian countries where industry upgrading has been most prominent (Lim 2000). Moreover, there is evidence of a negative correlation between women's share of employment and relative wages, indicating that as the industrial structure changes toward higher value added, where employment seems to be less gender-biased, the process may improve women's relative earnings (Nordås 2003).

In general, an enlargement in trade can increase the number of jobs available for women. However, the quality of these jobs is less clear. Black and Brainerd (2004) showed that increased competition from trade benefits female workers by reducing an employer's power to discriminate. However, Berik et al. (2003), examining the trade performance of the Republic of Korea and Taipei, China, found that competition from trade is positively associated with age discrimination against women. Finally, Busse and Spielmann (2006) found that the concentration of females in export-oriented industries in special economic zones can reduce bargaining power and result in lower wages and employment opportunities than in the rest of the economy.

Another major trend in trade has been shown to have a differential effect on women. The rise of global value chains (GVCs) has changed trade patterns and increased opportunities for more countries to engage in trade. For developing economies, entering a GVC usually occurs at the lower end of value added. Thus, the associated opportunities might also be more limited with respect to women. Women have been concentrated in those manufacturing jobs that are more labor intensive, such as in the textile and apparel industries. The expansion of these industries has increased female employment (ILO 2016). Although not without problems, this kind of expansion can be beneficial if it brings women into the formal labor force and out of sectors like subsistence agriculture. However, even that is changing

as new technology, particularly in East Asia, has led to the global defeminization of the manufacturing sector by shifting production from more labor-intensive to more capital-intensive activities (Kucera and Tejani 2014).

More generally, as GVCs tend to import more than average firms, and importing firms tend to hire more women, it can be inferred that GVCs hire more women. The data examined in the remainder of this chapter tend to support that contention. But evidence shows that the wage gap in these firms can be higher and some of the jobs created may not have permanent contractual status.

While the growth of GVCs led to an increase in trade in intermediate parts and components, more recently, trade growth in services has been stronger than that in goods (UNCTAD 2014). This has the potential to improve the opportunities of women who are overrepresented in the services sector. While women are often engaged in services that were traditionally considered non-tradable, that is changing as well, as supply through the major General Agreement on Trade in Services modes opens up, with the exception of Mode IV (temporary movement of service providers).

Trade can affect women through a variety of channels. Since women are consumers, they are affected by the relative price changes that trade brings about. However, they are also producers, and are therefore liable to be affected by the expansion or contraction of various sectors that increased openness to trade can cause. In particular, trade can alter the labor market incentives women face, and change the trade-off between home-based and formal work. Increased openness can also alter the incentives facing women traders, who often work informally. Changes such as these have far-reaching social implications that are outside the scope of this study. The purpose here is simply to elucidate different ways in which trade can affect women's growth and development experiences.

To provide some preliminary data analysis on the issues that arise in the context of trade and gender, we use the World Bank's Enterprise Surveys data set. The World Bank collects the data at the firm level in over 100 developing and transition economies, covering more than 100,000 firms. In the standardized version of the data set, it is possible to distinguish between firms that have at least one female owner and those that do not, as well as to identify the proportion of employees who are women. We use these splits in the data to examine the ways in which developing country women participate in trade and to highlight some of the potential questions that deserve further analysis.

The chapter proceeds as follows. The next section addresses several ways in which increased openness to trade can affect women:

as consumers, as workers, as business owners, and as traders. Section 6.3 takes a preliminary look at the available empirical evidence, which is scant; indeed, a major priority over the coming years should be the examination of the links between gender and trade at a fine level of disaggregation. The final section concludes and presents policy implications.

## **6.2 Trade and Women: Potential Channels**

Women interact with the global trading economy in many capacities. The net effect of trade integration on particular groups of women depends on the net outcome of a number of different effects. This point has perhaps not been made clearly enough in the policy literature, which tends to focus on interactions between women and trade on the production side, most frequently looking at women as workers, and sometimes as business owners. But women are also consumers—indeed, there are more women consumers in any economy than producers, at least in the market economy. Although consumption effects may be small in individual terms, the net effect can be large. The following sections consider several important ways that women can interact with the trading economy and how their development outcomes can be affected.

### **6.2.1 Women Consumers**

Women play an important role in all economies as consumers, including of imported goods. National policies that seek to liberalize the trading environment can therefore impact women through a consumption channel, by changing the relative prices of goods they purchase. The primary channel for consumption effects is through imports: increased openness facilitates international trade, which should push down prices and increase variety in import-competing industries. A secondary effect occurs in export industries when markets open abroad through the logic of reciprocity: prices can increase as a greater proportion of output is shipped overseas. Women consumers can be affected by trade through both channels, which are now discussed in more detail.

The import channel is well known from general trade theory. There is extensive empirical evidence that trade openness can contribute to lower prices and increased variety for consumers. These analytical results were built up using representative consumer models that do not distinguish between men and women. The general point is indeed true for men and women alike, but its implications, particularly regarding country contexts, can be very different depending on the consumption

patterns of men and women. Specifically, the price and variety effect differentials for the typical consumption baskets of men and women affect the relative distribution of gains from increased imports. To be clear, increased trade openness benefits women as well as men in their role as consumers, but the relative distribution of gains is also important. Given the historical and current discrimination against women, it would be consistent with the SDGs that when trade barriers are removed selectively, as is typically the case, priority should be given to goods that are more important in women's consumption baskets.

Unfortunately, there is little data available on the consumption baskets of women in developing countries. The standard data sources are typically aggregated at the household level, and although they may distinguish between female- and male-led households, they are insufficiently granular to differentiate consumption patterns, which could then be combined with information on trade flows and policy measures to develop indicators of the potential consumption impacts of increased openness on women.

Despite this paucity of data, one important example can make the point: food. According to the Food and Agriculture Organization of the United Nations, women tend to spend a higher proportion of their income on food for the household than men do.<sup>1</sup> Women consumers in developing countries, therefore, have a particular interest in access to low-cost, healthy, and nutritious food. However, world food markets are notoriously distorted, including on the import side in many developing countries. One effect of such policies is to push consumption prices up, which has a disproportionate impact on women consumers. From a gender equality standpoint, trade liberalization should emphasize food markets. This emphasis coincides in most countries with the markets that are most distorted, so it also makes sense from an efficiency standpoint. This is one example of how trade can be leveraged to promote the SDGs, in a way that is consistent with a policy stance that can also promote sustained economic growth and development.

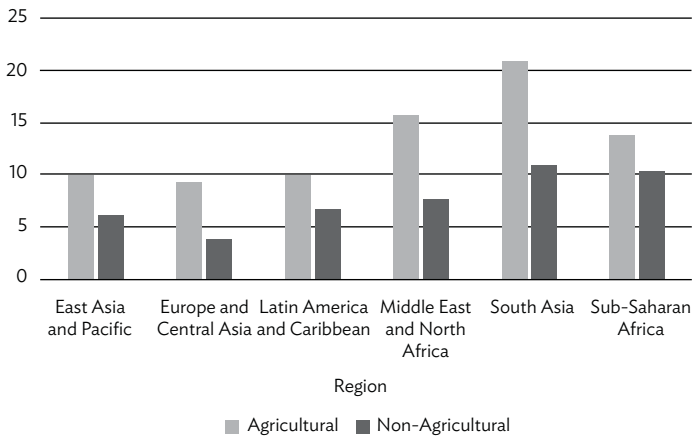
Tariff data from WITS-TRAINS reveal the level of trade restrictions imposed on imported agricultural products relative to industrial goods, using World Trade Organization classifications.

Figure 6.1 summarizes the WITS-TRAINS data by developing the (low- and middle-income) region. All regions have higher tariffs on agriculture than on non-agricultural products, which translates into a greater burden of trade policy on women than on men due to their different consumption patterns. The differences are often substantial.

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<sup>1</sup> See Food and Agriculture Organization. *Women and Sustainable Food Security*. <http://www.fao.org/docrep/x0171e/x0171e02.htm> (accessed December 2016).

**Figure 6.1 Simple Average Applied Tariff Rate on Agricultural versus Non-Agricultural Products, by Developing Region, Latest Available Year**



Source: WITS-TRAINS.

For example, average tariffs on agriculture are at least double the level of non-agricultural tariffs in South Asia, the Middle East and North Africa, and Europe and Central Asia. Although many factors spur agricultural protectionism around the world, including in high-income countries excluded from the figure, one effect that deserves further attention in the literature is the regressive effect these policies have on women.

The trade measures considered here are effectively an extra tax burden imposed on women due to differences in consumption patterns. Trade liberalization in agriculture would go some way toward removing this differential. To the extent that trade liberalization is typically selectively undertaken, it would be in line with the importance the SDGs attach to gender equality to act swiftly to remove import measures affecting agricultural products. This case demonstrates the potential for good trade policy to promote the interests of women, again as consumers.

## 6.2.2 Women Workers

The most analyzed links between women and trade regards the production side, specifically through the labor market. Women work in a variety of trade-affected sectors, with corresponding implications for

the level of employment, relative wages, and the gender pay gap. The key mechanism here is comparative advantage, so the remainder of this section explores the ways in which its operation can have particular implications for women workers.

As countries open to trade, they specialize according to comparative advantage, a process that is reinforced by reciprocal market opening abroad. Sectors with comparative advantage expand, while those with comparative disadvantage contract. This process has implications for women workers: if they tend to be concentrated in comparative advantage sectors, relative demand for female labor will increase, which can lead to higher levels of employment and income. If, on the other hand, they are concentrated in sectors that contract as a result of trade opening, demand will fall, which has implications for sectoral unemployment and wages.

Of course, many factors can impede the operation of this mechanism, or at least complicate the analysis of its effects on women workers. One is informality. In many poorer developing countries, women are concentrated in small-scale agriculture, where they typically work informally. When labor is supplied outside formal market structures, for example, within a household or extended family framework, comparative advantage may not translate into income gains for women. The distribution of gains from increased demand for output depends on bargaining power within the household, which, in many countries, puts women at a disadvantage. As a result, income gains may not be spent on goods that women value, but may be channeled into areas that primarily reflect men's preferences. This dynamic highlights how complementary policies are necessary to improve women's position within the household so that income gains can be distributed more consistently with gender equality objectives. Empowering women is crucial from a labor market standpoint.

A related labor market mechanism can be understood through Stolper-Samuelson logic. Opening to trade will tend to increase the relative price of the comparative advantage product, and thereby increase the relative return of the factor used relatively intensively in its production. The usual exposition of the theorem requires restrictive circumstances to hold, but more complex models also exhibit variants of this behavior. From the point of view of women workers, the logic is important because it suggests that if female labor is used relatively intensively in comparative advantage sectors that benefit from trade opening, one result might be an increase in the female wage rate relative to the male wage rate. To evaluate overall effects, there needs to be a detailed consideration of comparative advantage and disadvantage sectors and their corresponding use of female and male labor. It is

plausible that, at least in some countries, this logic may indeed play out in practice. For example, light manufacturing, such as of garments and apparel, is a comparative advantage sector in some lower-income developing countries. The sector is known to be relatively intensive in its use of female labor. By contrast, in those same countries, heavy manufacturing may be a comparative disadvantage sector, but one that is relatively intensive in its use of male labor. As a result, opening to trade could plausibly put upward pressure on the female-to-male wage ratio. Of course, such a result depends on unemployment and underemployment not being too high, so that wage effects can be felt. In the perhaps common situation where there is considerable slack in the market for female labor due to unduly low participation rates, the effect will be felt through increased employment instead.

Even where women are involved in the formal labor market and stand to gain from increased demand due to the operation of comparative advantage, discrimination may prevent those gains from being realized by individual women. All countries exhibit a gender wage gap, i.e., a difference in wages in men's favor, after controlling for other factors. As in the household case, women may be at a bargaining disadvantage in many developing countries, which prevents them from effectively realizing income gains. Notwithstanding this, the expansion of comparative advantage industries that use female labor relatively intensively could still increase labor demand and reduce unemployment and underemployment among women, even if wages do not increase. Importantly, this dynamic can promote women's employment formalization, as they move out of traditional occupations in the home and small-scale agriculture to participate in other industries, such as light manufacturing and services. From a gender equality standpoint, the formalization of women's labor is positive as it lays the foundation for increased bargaining power and improved labor market outcomes. It is an important component in broader attempts to empower women economically. However, women start from a significant disadvantage in the labor market, so it is important to develop complementary policies—including antidiscrimination laws, and effective enforcement—that allow them to compete on an equal footing. In saying this, we recognize that even the most advanced economies still see evidence of gender discrimination, so the emphasis in more traditional settings must be on improving women's circumstances, with a view to supporting the effective operation of the labor market in an environment of liberalized trade.

It is also important to highlight a dynamic aspect of the labor market analysis. Demand for labor varies according to skill level, and the distribution of skills is different in the male and female populations, in part due to discrimination in terms of women's access to education and



training at all levels. As countries move up the income ladder, relative demand for higher skilled labor is likely to increase, and opportunities for those without skills are likely to become scarcer. As a result, it is important to support women in their efforts to acquire comparable levels of human capital to men. In many societies, that process has many difficulties. Women face numerous challenges, from explicit discrimination to domestic expectations and the timing of fertility decisions. Supporting education for women and girls is a crucial part of ensuring that they can take advantage of higher paying job opportunities that arise as countries develop.

### **6.2.3 Women-Owned Businesses**

Women are not only active in international trade as consumers and workers, but also as business owners. In terms of traditional trade models, they can be seen as the owners of capital, who benefit from rental returns. As for the case of women workers, the crucial mechanism here is specialization by comparative advantage, as well as the Stolper-Samuelson logic: women-owned businesses in comparative advantage sectors will tend to grow as opening to trade takes place, whereas those in comparative disadvantage sectors will contract. Similarly, if women's capital holdings tend to be concentrated in comparative advantage sectors, there is also the possibility that the real return might increase. Both dynamics offer women business owners possible gains from trade, in addition to valuable export opportunities that arise from market opening abroad.

Again, the crucial issue for women business owners is the interplay between their sectoral distribution and comparative advantage patterns. However, it is important to bring more recent insights from trade theory into play as well. Heterogeneous firm models emphasize intrasectoral reallocations that take place as trade costs fall, from low productivity firms to high productivity ones. Discrimination—both explicit and implicit—can keep women entrepreneurs locked in low-productivity firms, which are the most likely to suffer from foreign competition as markets are opened. Another complementary approach to enable women to take advantage of trade liberalization therefore relates to the encouragement of female entrepreneurship, both in terms of starting businesses, and their growth and development. Women need to be encouraged to enter sectors based on the identification of growth opportunities. Women-owned firms need access to finance to allow them to develop—an area in which anecdotal evidence suggests that men often perform better due to women's difficulty in putting up collateral and demonstrating creditworthiness to lenders.

### **6.2.4 Women Informal Cross-Border Traders**

The preceding discussion has been general in scope. This final subsection addresses a more detailed issue that has received considerable attention in the policy literature relating primarily to African countries: women informal cross-border traders. In many parts of Africa, borders are porous and substantial informal trade takes place. Women are heavily involved in this trade, for example by taking small amounts of merchandise across borders multiple times in a day. The women involved in this kind of trading activity are poor and located in border areas. The issue is that one particular type of trade liberalization—improvements in trade facilitation—can have negative implications for their activity, which provides them with income. In addition, women informal cross-border traders are often subject to harassment at border crossings, including sexual harassment.

The mechanism, in this case, is simple. Informal trade exists in part because formal trade is relatively difficult and costly, with inefficient border crossings and redundant documentary requirements. As formal trade costs come down with improved trade facilitation, the incentive for exporters to move their goods informally is correspondingly less. Although this might be beneficial overall for the economy, the implications for women informal cross-border traders can be negative. They may lose all or part of their activity, which may represent the only opportunity for employment outside the home.

Again, this case makes clear the need for complementary policies to accompany trade liberalization, including nontraditional market opening measures like trade facilitation. It is important that the gains from reform be used in part to assist those who stand to lose as a result. In the case of women informal cross-border traders, assistance could be directed to supporting other economic activities outside the home or improving educational opportunities to provide skills that would enable them to work with formal traders.

## **6.3 Empirical Evidence**

The previous section clarified how women interact with trade in several ways. It is impossible to be categorical about an overall or unidirectional relationship between women and trade because the result for particular groups of women is different according to the effects that accrue to them due to their different roles as producers, consumers, business owners, and traders. Such ambiguity makes empirical research difficult, but it is nonetheless striking that such an important issue should have received so little attention in the literature. This situation will need to be

remedied in the coming years if the SDG period is to coincide with the development of policies that ensure that women can benefit from trade.

The remainder of this section examines the empirical evidence that is available on the implications of trade openness for women. Not all the mechanisms reviewed in section 6.2 can be examined empirically as data are often lacking. The next subsection provides a brief review of the literature, and the following subsection presents some original results from the World Bank Enterprise Surveys.

### 6.3.1 Findings from Previous Literature

The bulk of previous work on gender and trade focuses on labor market issues. Exposure to international markets has been shown to improve outcomes for workers in general, but not necessarily for women. In their seminal work, Bernard, Jensen, and Lawrence (1995) showed that United States (US) exporters pay higher wages and that this wage premium goes to both production and non-production workers. The degree to which this export wage premium accrues differently to men and women is still unknown. Klein et al. (2013) found that German manufacturers paid a premium to high-skilled workers while discounting low-skilled workers' salaries. To the extent that women are overrepresented in lower-skilled jobs, we would expect to observe an increase in the wage gap due to exporting. Indeed, Boler, Javorcik, and Ulltveit-Moe (2015) found that exporting Norwegian firms exhibit higher gender wage gaps than non-exporters, but found the effect only in *skilled* workers.

Black and Brainerd (2004) tested whether increased trade openness induced employers to reduce discrimination against women by estimating the differential effect of increased imports on concentrated versus competitive industries. The results showed that after controlling for skills, the gender wage gap narrowed more rapidly in concentrated industries than in competitive industries, concluding that product market competition drives out discrimination in the labor market since it costs employers to continue discriminatory practices. However, other studies have shown that competitive forces from trade liberalization alone have limited impact on the wage gap between women and men (OECD 2005).

Juhn, Ujhelyi, and Villegas-Sanchez (2012) examined the degree to which trade liberalization under the North American Free Trade Agreement induced exporting firms to update their technology in a way that raised the relative wage and employment rate of women in blue-collar occupations in Mexico. Using firm-level panel data between 1991 and 2000, they concluded that a firm in an industry experiencing the average reduction in US tariffs of 5.2 percentage points increased

female employment share in blue-collar occupations by approximately 20% more than a firm experiencing zero tariff change. In terms of wage bill share, the effects are even larger, with an average tariff reduction of 5.2 percentage points, causing a 24% increase in blue-collar women's relative wage bill. They attribute these results to the entry of exporting firms that invested in new machinery and equipment, and this new technology raised the productivity of blue-collar female workers.

In a similar study for Colombia, Ederington, Minier, and Troske (2009) investigated whether firms in industries experiencing the greatest reduction in tariffs increased the employment of female blue-collar workers more than in industries that had little or no reduction in tariffs. They use plant-level data from 1984 to 1991, during which Colombia experienced an average tariff reduction of 31.4 percentage points. They found empirical evidence that industries with reduced tariffs increased their share of female plant workers by 6.9% compared with industries with no change in tariffs. Similar to Black and Brainerd (2004), they argued that this result stemmed from increasing competition, leading existing plants to hire more women in Colombia. However, they also showed that plants that employ more women tended to pay lower wages than the industry average.

World Bank (2001) provided evidence that strong export-oriented growth in Southeast Asia has strengthened gender equality over the last 50 years. Key export industries, such as textiles and electronics, rely heavily on relatively unskilled, but generally literate, workers. To meet this requirement, many countries in Southeast Asia have implemented programs that urged basic education for all, and which particularly benefited young women and girls. In 1970, women made up 26%–31% of the labor force in Indonesia, Malaysia, and Singapore. By 1995, women's share in the labor force had risen to between 37% and 40% in those countries.

UNCTAD (2004) showed women's participation in export-led industries, such as textiles, pharmaceuticals, food processing, electronics, and toy production, has been strongly increasing in many developing economies, reaching between 53% and 90% of the labor force in 2003.<sup>2</sup> Many of these jobs in the light-manufacturing export sectors are new, providing opportunities for women outside more traditional sectors.

But the reality is that women in low-income economies are more often employed in subsistence agriculture, while men tend to be employed more widely in export sectors, suggesting that greater openness to trade

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<sup>2</sup> Countries cited include Bangladesh, Cape Verde, the Dominican Republic, Guatemala, Honduras, Jamaica, Kenya, the Republic of Korea, Malawi, Malaysia, Mauritius, Mexico, Nicaragua, Pakistan, the Philippines, and Sri Lanka.

may lead to an increase in gender inequality (UNCTAD 2004). Indeed, Berik et al. (2003) showed that greater trade openness in Taipei, China between 1980 and 1990 was associated with a widening of the gender wage gap. Here, import competition appears to adversely affect women's relative employment, leading to their loss of both opportunity and bargaining power.

The existing literature shows that labor market dynamics are complicated regarding gender and trade. There is considerable scope for country-level particularities to play out. Going forward, the use of highly disaggregated data will be important in identifying the different mechanisms discussed in section 6.2. It will also be crucial to expand research into the areas not yet examined empirically in any detail, such as female consumption patterns and trade, and women informal cross-border traders. More fundamentally, the mechanisms underlying possible discrimination against women workers will need to be laid bare, and policies developed to deal with the relevant factors. Boler, Javorcik, and Ulltveit-Moe (2015) provided an example of the type of work that is needed. As noted above, they found a gender wage gap in Norwegian employer–employee data. They hypothesized that women may be perceived as less-committed workers than men, which leads to de facto discrimination. In this case, there is an exogenous shock that allows the authors to test their contention: the lengthening of paternity leave, which should balance the perception of commitment between male and female workers. Indeed, they found that introducing this new policy narrows the gender wage gap in exporters. The paper is instructive both because of its research method, which postulates a concrete mechanism for a previously observed effect, and its policy implications; there is clearly a role for creative labor market interventions to help reduce de facto discrimination against women workers.

### **6.3.2 World Bank Enterprise Surveys**

The Enterprise Surveys dataset tracks the number of female production and non-production workers at each firm, in addition to total employees. That makes it possible to derive a measure of the proportion of each business' workforce that is made up of women. Figure 6.2 presents a breakdown of that measure by firm type, looking at direct exporters, indirect exporters (through a wholesaler), and firms that serve the domestic market only. Clearly, internationalized firms have a higher proportion of female employees than firms that do not export at all. In part, this finding is due to sectoral composition effects—exporting firms in many Enterprise Surveys countries are active in the textiles and clothing sector, which is known to be intensive in female labor.

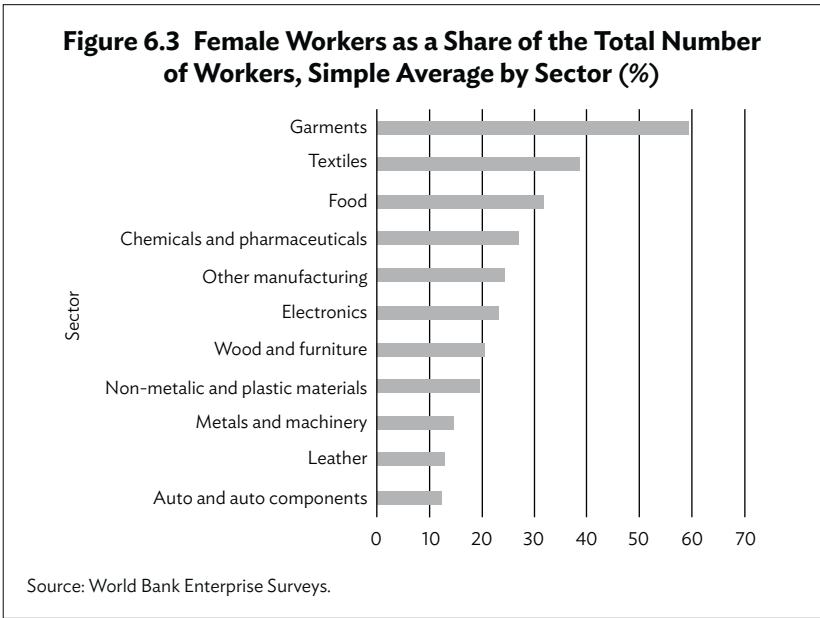
**Figure 6.2 Share of Female Production and Non-Production Workers, by Firm Type, All Countries and Years (%)**



Source: World Bank Enterprise Surveys.

It is also important to highlight that firms that import intermediate goods also tend to employ a greater proportion of women. It is therefore not only on the export side that firm internationalization can create demand for female labor. Taking the exporting and importing results together indicates that linking firms to international markets can be one way of bringing women into the formal labor force and providing them with wage income. Of course, this encouraging finding needs to be tempered by a recognition of persistent gender wage gaps, even in developed countries—an issue the Enterprise Surveys do not document. Notwithstanding this caveat, the data nonetheless show that trade can potentially be good for women workers, as comparative advantage sectors take on more employees and draw them into the formal wage-labor market.

Of course, it is important to be cautious in interpreting simple averages, as in Figure 6.2. They represent observed differences only and do not control for the intervening factors that may affect labor demand. It is important to supplement them with econometric analysis of the demand for female labor and its links to firm internationalization. Results from such an analysis (see Shepherd and Stone [2013]) show that internationalized firms indeed tend to be more intensive in their



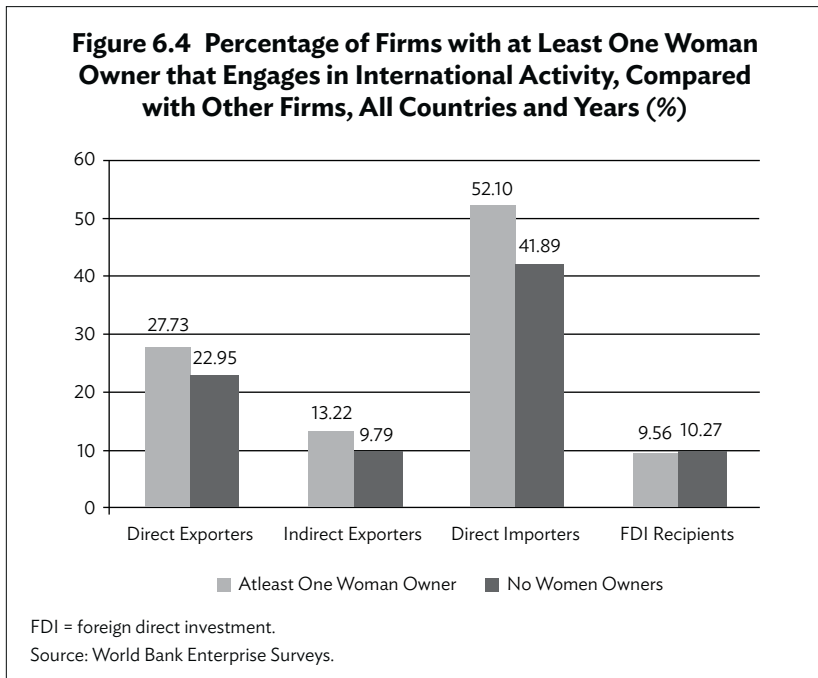
use of female labor, even after controlling for other relevant factors. Of particular note is that the combination of importing, exporting, and being foreign invested is associated with a higher proportion of women in the workforce. This evidence suggests that participation in GVCs can, under the right circumstances, be positive for women’s employment, subject again to the issue of the gender pay gap, which cannot be evaluated using these data.

As noted in section 6.2, it is also important to analyze the sectoral distribution of female labor in developing countries, and to relate it to possible comparative advantage sectors. In a study like this one, it is not possible to analyze every country-sector combination. Instead, we present average figures by sector across countries to provide some first indications of the data. Figure 6.3 contains the results. It is not surprising to see textiles and garments as the two sectors with the highest proportion of female workers. As noted above, these sectors are sources of comparative advantage in several developing countries, which bodes well for the local female labor market as trade opens up. As manufacturing activity becomes heavier, female labor use becomes relatively less intensive. It is striking that in all sectors, except garments, women represent less than half of employees on average in developing country manufacturers. The data are consistent with a difficult labor market for women, likely due to explicit and implicit discrimination.

By increasing labor demand, trade openness can potentially strengthen labor markets, but, as noted above, it will be important to look closely at the functioning of labor market institutions to ensure that women can take jobs for which they are qualified.

The second area described in section 6.2 for which the Enterprise Surveys have data is women-owned businesses. A descriptive analysis of the data (Figure 6.4) suggests that women-owned firms are active in international trade. Higher percentages of women-owned firms export (directly and indirectly) than their counterparts with only male owners, although the differences are not very large. Women-owned firms are similarly more likely to be direct importers of intermediate inputs, which tend to boost productivity and competitiveness. However, these firms are slightly less likely to receive foreign direct investment. Based solely on the descriptive statistics, it would appear that women-owned firms compete successfully in international markets. But the understanding needs to be nuanced by detailed econometric analysis that controls for other factors.

Preliminary analysis using an econometric model of export behavior that controls for factors like size and capital intensity suggests that the picture is not as rosy as Figure 6.2 would suggest. In fact, women-





owned businesses export less directly in dollar terms than other firms, even after controlling for intervening causes. However, performance for indirect exports is not different to a statistically significant extent. This finding suggests that women-owned businesses may be more reliant on intermediaries like wholesalers to overcome some of the fixed costs associated with exporting. Examples of such costs include information costs on tastes and standards in the foreign market. Alternatively, the econometric results could be consistent with women-owned businesses having less well-developed international networks, hence the need to go through a middleman, such as a wholesaler. In any case, these preliminary results suggest that there is work to be done to boost the ability of women-owned firms to compete successfully in international markets, and in particular to make direct links with overseas buyers.

What are the factors constraining women-owned businesses in their pursuit of international success? The Enterprise Surveys, which asked respondents to cite their top three business constraints, provide some suggestive information. For women-owned businesses, the most commonly cited constraints are access to finance (16% of respondents), practices of competitors in the informal sector (13%), and tax rates (13%). By contrast, firms without at least one female owner list electricity (17%), access to finance (15%), and tax rates (12%). These results suggest that there is some overlap in terms of the policy agenda promoting women-owned businesses in international markets. Women-owned firms, as well as their male-owned counterparts, clearly see tax issues and access to finance as crucial constraints on their ability to compete. There is a clear agenda for regulatory reform in those areas in a way that promotes inclusive growth. Importantly, though, women-owned businesses also cite practices in the informal sector, perhaps because at their smaller scale—and given their sector distribution—they are more subject to this type of difficulty than male-owned businesses. The formality discussion is one that has implications for women in a variety of settings, and these results suggest that it is true for trade, too.

## **6.4 Conclusion: Making Trade Good for Women**

This chapter has reviewed several economic mechanisms that connect women with the global trading economy. Increasing trade openness at home and abroad has implications for women in their capacities as consumers, workers, business owners, and traders. It is impossible to provide any general response to the question of whether trade is good for women—its net impact is the result of a set of positive and negative effects that play out differently in different country and sector contexts.

Given the complexity that arises when multiple economic mechanisms are in play, there is a clear need for detailed empirical work to parse their relative importance. It is striking that there is relatively little such work that deals specifically with the case of women, and almost all of it deals with labor markets. Additional evidence presented here shows that women-owned businesses face difficulties in internationalizing, but they nonetheless do so at an impressive rate. On the employment side, there is clear evidence that internationalization can be good for women's job prospects. Of course, the gender pay gap is persistent around the world and is an issue that needs further consideration in the context of trade. There is mixed evidence on that front in the literature, and more work is needed specifically in the developing country context.

There are several policy implications in these findings. The first is to note that the gender aspects of trade are still poorly understood and under-researched. There are few contributions in the academic literature, while the policy literature has tended to focus on particular issues, such as women informal cross-border traders, and has not fully grappled with the available data. This study is an attempt to come to a more complete understanding of the ways in which trade affects women in developing countries, specifically with the aim of establishing whether, and, if so, under what conditions, it can be a positive force for gender equality in the context of SDG 5.

In reviewing the data on women-owned businesses, it is apparent that informal practices represent a serious constraint for formal sector businesses. The issue of informality is pervasive in developing economies, particularly in low-income economies. Barriers to the formalization, including trade, need to be addressed at the policy level. In some cases, administrative procedures are unnecessarily burdensome, which discourages entrepreneurs from formalizing. Employment laws can also be an issue, as can tax rates and administration. Regulatory reform that is effective—in that it achieves important social goals—and efficient—in that it does so at minimum economic cost—would be welcomed in many developing countries. Women-owned businesses, as well as women in the workforce, would stand to gain from these types of reforms.

Another issue relates to the role of GVCs in development. There is evidence that the cluster of activities associated with GVC participation is associated with more intensive use of female labor, although there is, of course, a sector composition issue playing out, particularly through textiles and clothing-related activities. Nonetheless, identifying policies that support women's engagement with GVCs promises to be beneficial for trade as well as gender equity.

As in the case of health, there is evidence that there is scope for “win-win” solutions in gender and trade: policies that are good for

women, and that also serve to boost engagement with international markets. In many cases of relevance to developing countries, there is good reason to believe that opening to trade can benefit significant groups of women, particularly those employed (or potentially employed) in comparative advantage industries. However, there is also the scope for losses to accrue to particular groups. It is, therefore, important to pay heightened attention to the design of complementary policies that can support women in their multiple engagements with international markets. Addressing discrimination in labor markets, as well as in business operation and financing, are key. It is also important to support the education and training opportunities of women and girls so that they can take advantage of opportunities that require a certain degree of skill. These measures are consistent with a liberal approach to trade, as well as with a more general posture in favor of gender equality.

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# 7

## Can Trade Benefit Employment?

*Paul Vandenberg*

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### 7.1 Introduction

For more than 4 decades, globalization has been a major force shaping economies throughout the developed and developing worlds. It has offered new opportunities for economic growth, but also greater competition, increased instability in some areas, and heightened pressures on countries and firms to adapt to technologies and market conditions. The debate about the benefits and drawbacks of increased integration has been lively and will no doubt continue. It will do so as new trade agreements are signed in some regions and as a new wave of protectionist sentiment may (potentially) stall liberalization or raise barriers in others.<sup>1</sup> In this context, prudent governments have sought the best ways to manage the process and harness the benefits of trade.

In this period of globalization, the international community agreed to a set of development goals to focus the attention and efforts of governments and international assistance agencies. The aim of the Millennium Development Goals (MDGs), agreed upon in 2000, was to improve the welfare of people in the developing world by setting goals

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<sup>1</sup> Canada and the European Union (EU) signed the Comprehensive Economic and Trade Agreement in October 2016, eliminating 98% of tariffs. The Trans-Pacific Partnership Agreement (TPPA or TPP) was signed by 12 Pacific Rim countries in February 2016. These agreements suggest continued global trade liberalization. However, the incoming administration in the United States (US) (2017–2020) appears to be protectionist, which may affect ratification of the TPP and the conclusion of negotiations for the US-EU Transatlantic Trade and Investment Partnership (TTIP). The World Trade Organization (WTO) recorded that an average of 15 trade-restrictive measures were introduced per month in the year ending mid-October 2015 (WTO 2016). The number of trade-liberalizing measures was 19 per month during the same period. However, there remains a large stockpile of restrictive measures (2,557) introduced since 2008.

that were specific and in most cases measurable. As the date for the achievement of the MDGs drew near, the international community took stock of what had been accomplished, and agreed in 2015 on a new set of goals, called the Sustainable Development Goals (SDGs).

Increased trade is not one of the SDGs, and there are few references to trade in the SDG document. Trade, however, can be a powerful “enabler” supporting the achievement of the goals. The question is how to ensure that the process of global integration aids the achievement of the SDGs. Trade allows countries to specialize, and it can raise productivity, promote growth, and create jobs, but this is not automatic. We might thus expect trade to contribute to the achievement of the SDGs if it is sustained and accompanied by appropriate adjustment policies.

This chapter focuses on the employment aspects of the SDGs. The attention is, therefore, on Goal 8, which seeks to “promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.” Sectors often need to adjust to trade liberalization, with the government playing a role in cushioning impacts and supporting employment transitions. Thus, we are interested not only in the impact of trade on employment, but also the effect of worker adjustment policy. Our analysis is guided therefore by the following questions: (i) will increased trade support the employment objectives of the SDGs?, and (ii) what role might government play in facilitating employment transitions resulting from trade?

The chapter is organized as follows. Section 7.2 sets out the employment aspects of the MDGs and the SDGs. Section 7.3 considers the conceptual and theoretical links between trade and employment. Section 7.4 reviews the empirical literature on the links and seeks to tease out and differentiate the conditions and policies under which trade has improved employment outcomes from cases in which negative outcomes have resulted. Section 7.5 brings together the policy issues, and a brief final section concludes the chapter.

## **7.2 Employment in the MDGs and the SDGs**

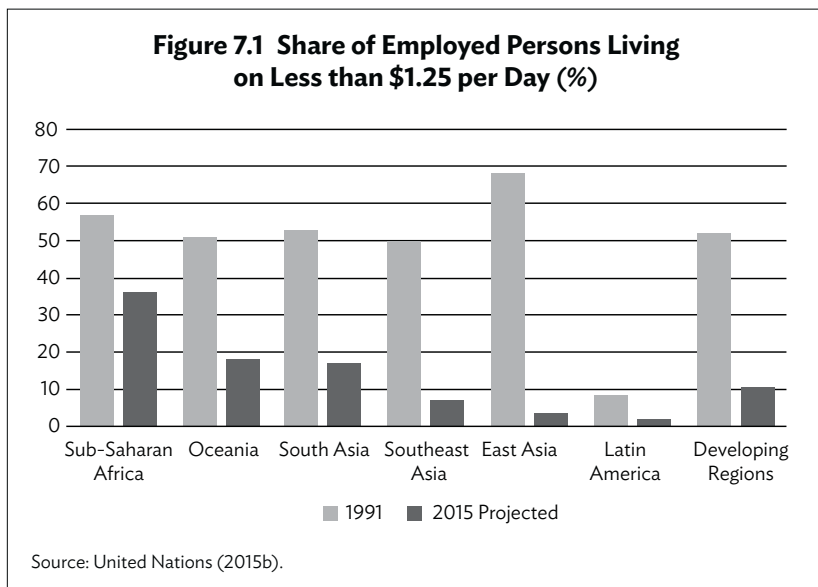
### **7.2.1 Employment in the MDGs**

Employment was not part of the original MDGs set in 2000, but a target with specific indicators was added 8 years later. The target, under the first goal of reducing extreme poverty and hunger, called on countries to “achieve full and productive employment and decent work for all, including women and young people.” This target had four indicators: (i) the growth rate of labor productivity; (ii) the ratio of employment to population; (iii) the working poverty rate (share of employed persons

living below the poverty line); and (iv) the vulnerable employment rate (share of own-account workers and contributing family workers in total employment). No specific quantitative targets were set (e.g., that the working poverty rate should be halved by 2015), and thus there could be no verification of whether the targets were achieved.

Three of the four indicators clearly show which direction they should move to improve employment; for the other indicator, it is not clear. Thus, labor productivity should rise and the working poverty rate and the level of vulnerable employment should fall. However, the employment-to-population ratio is problematic because positive and negative factors can move the ratio in the same direction. For example, people staying in school longer (a good thing) depresses the rate, but so does a higher unemployment rate (a bad thing). The rate can depend heavily on the female labor force participation (because they decide whether to engage in paid work or in unpaid household and family care), and can vary with a country's level of economic development.

The evidence suggests that there were movements in the right direction during the MDG coverage period (1991–2015). The working poverty rate moved in the right direction as the share of employed persons living on less than \$1.25 per day fell dramatically from 1991 (Figure 7.1). It did so in line with a similar decline in the general poverty rate, which was the key MDG target. In East Asia, the share of the working poor fell from 68% to 3%, and in Southeast Asia from

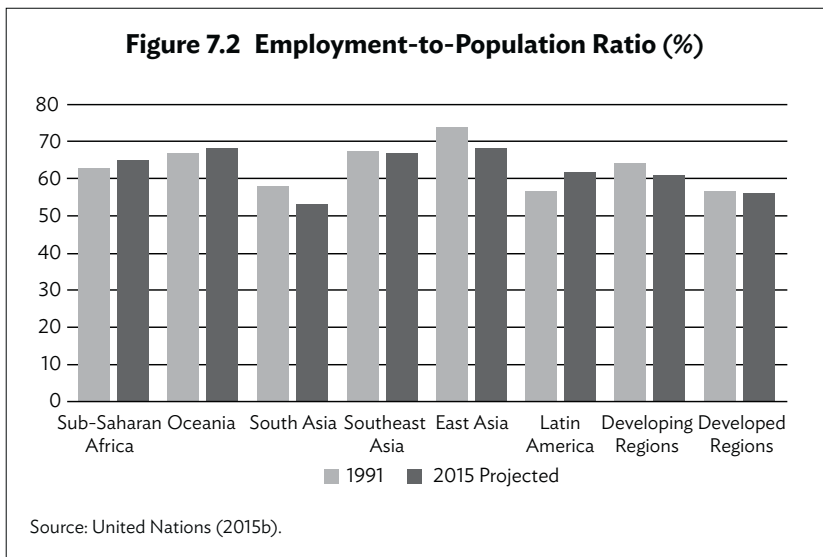




50% to 17%. Progress was also made in reducing the share of workers in situations of vulnerable employment (own-account and unpaid family workers). The global share dropped from 55% to 45%, although the ratio remains high for sub-Saharan Africa and South Asia, where it is about 75%. The absolute number of vulnerable workers rose during the MDG period from 1.25 billion to 1.45 billion (United Nations 2015b). In summary, between 1991 and 2015, the world experienced a significant decline in the share of the working poor and a noticeable fall in the share of vulnerable employment, and this occurred during a period of rapid globalization, including increased trade and lower barriers to trade. However, we would need more detailed analysis to understand whether globalization aided these improvements.

As noted, the employment-to-population ratio is a more problematic indicator. The ratio varies considerably from 43% in North Africa to 68% in East Asia and Oceania (Figure 7.2). During the MDGs’ period from 1991 to 2015, it rose by 6 percentage points in East Asia and fell by 5 percentage points in Latin America and the Caribbean. Globally, the ratio fell in five regions, rose in three regions, and stayed the same in one region in the same period. As noted, it is not clear whether increases or decreases are good or bad.

None of the four MDG employment indicators were carried over to the SDGs; instead, they appear to have been replaced by indicators capturing similar aspects of employment. The employment-to-population ratio was replaced by the unemployment rate, a less



**Table 7.1 Share of Persons Employed in the Informal Sector in Total Nonagricultural Employment**

Country	Year	Share (%)	Country	Year	Share (%)
Armenia	2009	10.2	Malaysia	2012	11.1
	2012	9.9		2013	13.2
	2013	10.1	Nepal	1999	73.3
Georgia	1999	6.9	Pakistan	2002	70.0
India	2005	68.8		2004	70.0
	2010	67.5		2010	72.7
	2012	65.7	Philippines	2008	72.5
Indonesia	2009	64.8	Sri Lanka	2009	50.5
Kazakhstan	1995	11.7	Thailand	2013	32.2
Kyrgyz Republic	2003	24.2	Turkey	2013	21.7
	2009	59.2			

Source: International Labour Organization (2015b).

ambiguous indicator, although still problematic in the case of poor countries that lack social security and where underemployment can be high. The unemployment rate can often reflect the situation of the urban middle class that can afford to be unemployed. Vulnerable employment was replaced by informal employment in the SDGs. Informal employment has experienced both increases and decreases across countries in recent years, and in Asia it remains high in India, Pakistan, and the Philippines (Table 7.1). The working poverty rate and the labor productivity rates were not carried over, whereas the growth rate of real gross domestic product (GDP) per person employed was added; all three of these indicators relate, directly or indirectly, to workers' income.

## 7.2.2 Employment in the SDGs

There are 17 SDGs. Each goal has several targets, and each target is associated with one or more measurable indicators. The latter allow for the tracking of progress over the 15-year period. The issue of employment is concentrated in Goal 8, which is to “promote inclusive and sustainable economic growth, employment and decent work for all.” The goal has 12 targets, of which 8 include a mention of employment; and those 8 targets are linked with a total of 11 indicators. The targets and indicators are provided in Table 7.2.

The coverage is broader than the MDGs, with an emphasis on the quality of employment and the identification of several specific groups

**Table 7.2 Targets and Indicators for SDG 8**

<b>Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.</b>			
	<b>Targets</b>		<b>Indicators</b>
8.2	Achieve higher level of economic productivity through diversification, technological upgrading and innovation, including through a focus on higher value added and labor-intensive sectors	8.2.1	Annual growth rate of real GDP per person employed
8.3	Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro, small and medium-sized enterprises including through access to financial services	8.3.1	Proportion of informal employment in nonagriculture employment, by sex.
8.5	By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	8.5.1	Average hourly earnings for female and male employees, by occupation, age and persons with disabilities
		8.5.2	Unemployment rates, by sex, age and persons with disabilities
8.6	By 2020, substantially reduce the proportion of youth not in employment, education or training	8.6.1	Proportion of youth (age 14–24 years) not in education, employment or training
8.7	Take immediate and effective measures to eradicate forced labor, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labor, including recruitment and use of child soldiers, and by 2025 end child labor in all its forms	8.7.1	Proportion and number of children age 5–17 years engaged in child labor, by sex and age
8.8	Promote labor rights and promote safe and secure working environments for all workers, including migrant workers, in particular, women migrants and those in precarious employment	8.8.1	Frequency rates of fatal and nonfatal occupational injuries, by sex and migrant status
		8.8.2	Increase in national compliance of labor rights (freedom of association and collective bargaining) based on International Labour Organization textual sources and national legislation, by sex and migrant status

*continued on next page*

**Table 7.2** *continued*

<b>Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.</b>			
<b>Targets</b>		<b>Indicators</b>	
8.9	By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products	8.9.1	Tourism direct GDP as a proportion of total GDP and in growth rate
		8.9.2	Number of jobs in tourism industries as a proportion of total jobs and growth rate of jobs, by sex
8.b	By 2020, develop and operationalize a global strategy for youth employment and implement the Global Jobs Pact of the International Labour Organization	8.b.1	Total government spending in social protection and employment programs as a proportion of the national budgets and GDP

GDP = gross domestic product.

Note: Only targets and indicators from Goal 8 related to employment are provided.

Sources: United Nations (2015, 2016a).

within the labor force. Three targets focus on job creation (“full and productive employment,” “labor-intensive sectors,” and jobs in tourism) and in one of these there is a call for gender wage equality (“equal pay for work of equal value”). There is one specific target dedicated to youth and two other targets that mention young people. High levels of youth unemployment have been a major concern for the international community over the past decade and are perceived to contribute to social unrest. One of the targets calls for the promotion of labor rights and safe working conditions; another focuses on formal instead of informal employment.

The dark side of employment practices is addressed in the SDGs, with targets for eradicating forced labor, child labor, modern slavery, and human trafficking. The sole indicator for this target is for child labor. And the final target in Goal 8 includes a call for the implementation of the Global Jobs Pact of the International Labour Organization (ILO). Indeed, the employment targets reflect rather closely the agenda of the ILO.

Employment issues are not limited to Goal 8 as there are numerous other references to work and jobs in the introductory sections of the United Nations document and in other goals and targets. Goal 4, on education, is related to employment, notably Target 4.4 that governments should “by 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.” Goal 5, on gender

equality, calls for countries to “recognize and value unpaid care and domestic work” and to provide supportive public services and social protection policies in that regard (target 5.4).

Furthermore, Goal 10, on inequality, encourages countries to implement “wage and social protection policies [to...] progressively achieve greater equality” (target 10.4). There is also a call for the promotion of “orderly, safe, regular and responsible” migration (target 10.7) that implicitly relates to employment, since a key aspect of intercountry people movement is labor migration. While there are few numerically defined targets in the SDGs, there is one for labor migration, which targets a reduction in the cost of sending remittances to less than 3% of the value of the money sent, and the elimination of remittance corridors where transmission costs are above 5% (target 10c). These targets are to be achieved by 2030.

## **7.3 Concepts and Trends in the Link between Trade and Employment**

### **7.3.1 Employment and the Gains from Trade**

Labor has been an integral part of trade theory since David Ricardo devised the theory of comparative advantage nearly 200 years ago. According to the theory, the gains from trade arise because of differences in labor productivity. The subsequent development of trade theory explained patterns of trade based on factor abundance, with labor, along with capital, a key factor in the discussion. The impact of trade on the returns to factors of production has provided the connection between trade and wages. Indeed, trade theory has focused more on the impact of trade on wages than on the level of employment. Much of trade theory assumes full employment before and after liberalization, despite shifts in deployment during the period of transition.

Trade brings into competition producers from different countries that vie for a share of an expanded market. This competition enables more efficient producers to wrest market share from less efficient ones and for countries to specialize. One of the oldest, most powerful, and nonobvious concepts in economics is that while there may be winners and losers following trade opening, the net benefit for each country is positive. This is Ricardo’s theory of comparative advantage and it holds even in situations in which one country has higher productivity (i.e., absolute advantage) in producing the two goods that it trades with another country. Each country benefits from specializing in the good in

which it has a comparative advantage. At the country level and for both (or all) countries, welfare is always increased as a result of trade.

Trade theorists have sought to build on this base concept by explaining what determines a country's comparative advantage. While Ricardo based his theory on (unexplained) differences in labor productivity, the Heckscher–Ohlin theorem, formulated in the 1920s and 1930s, states that a country will have a comparative advantage in, and therefore export, the goods that use intensely the country's abundant factor. Here we begin to see the connection between trade and employment, as labor is a key factor of production. Through expanded trade, the price of goods produced with the abundant factor will rise in the exporting country and will raise returns to this factor. Therefore, in a labor-abundant country, trade will expand the demand for labor and raise the wage. The labor-abundant country will have had a lower wage to begin with, so the wage rises, while it will fall in the country where labor is relatively scarce.

The model of factor abundance initially did not explain the actual patterns of trade, notably for the United States (US), resulting in Leontief's famous paradox that the US should be exporting capital-intensive goods but was, in fact, exporting labor-intensive ones. Subsequent analysis weakened or eliminated the paradox; notably, when labor was differentiated into skilled and unskilled labor (Krugman and Obstfeld 2009). Wood (1995) went further in proposing a three-way distinction between illiterate, literate but unskilled, and skilled labor, and argued that differences in workforce skills were the defining characteristic of traded goods. Capital was left out of the model because it, unlike labor, is internationally mobile.

Factor abundance also had a greater impact in determining trade between developed and developing countries than among developed countries. Low-income countries specialized in goods produced with low-cost, low-skilled labor, such as textiles and clothing, and assembly operations, ranging from plastic toys to electronics (Hanson 2012). The production and export of these goods by advanced countries have declined considerably, with these countries exporting complex goods with high capital content, including human capital. Factor abundance may also explain some of the shift from manufacturing into primary exports for resource-rich countries in Latin America and elsewhere following trade liberalization. We return to the empirics below.

Whereas classical trade theory modeled inter-sectoral trade, a new stream of theory, developed in the late 1970s and early 1980s, sought to account for the large share of intra-sectoral trade in global trade, particularly between advanced countries (Krugman 1979). These models incorporated more realistic assumptions about production structure

and consumer preferences, in particular by adding economies of scale and product differentiation based on monopolistic competition. The new trade theory was more focused on explaining the empirical reality of intra-sector trade than on shifts to post-liberalization changes and thus has probably no more and possibly less to say about employment than traditional trade theory.

In the early 2000s, a stream of analysis developed that derived from new empirical findings on the considerable heterogeneity among firms and, in particular, productivity differences between exporting and non-exporting firms (Bernard and Jensen 1999). This “new-new” trade theory sought to explain the differences between firms producing the same or very similar goods in the same country (Melitz 2003). Opening to trade exposes these differences and results in the expansion of more productive firms and an increase in the overall level of industry productivity. This intra-industry expansion and contraction has implications for job creation and job destruction. As Jansen and Lee (2007) noted, this may ease transition as job movements within the same industry tend to be easier than those between industries because skills may be similar and information about opportunities more available.

Thus, classical, new, and new-new trade theories have had relatively little to say about net employment. The theories assume full employment in pre- and post-liberalization periods and have recognized, but not been concerned about, the transition between the two. Transitions are assumed, implicitly or explicitly, to be immediate and frictionless.<sup>2</sup> Where theory has had much more to say is on wage levels. In a country with abundant low-skilled labor, the real wage of low-skilled workers should rise. This should benefit the many workers in developing countries that are attracted to export industries. But at the same time, the real wage of high-skilled workers should fall. This may be problematic because countries in the developing world seek to produce and export higher value goods, which in turn require a more skilled labor force. For industrialized countries, the process predicted by theory is somewhat less problematic, but challenging nonetheless. These countries export goods with a higher capital and skills content that requires (and rewards) skilled workers. The downside is that this reduces demand for less-skilled workers and puts downward pressure on their wages, which are major policy concerns in the US and similar countries. The challenge there is to upgrade the skills of low-skilled workers.

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<sup>2</sup> For example, Krugman (1979) assumes full employment, although he does discuss intra-country labor migration.

In terms of the SDGs, standard trade theory provides more direction on the quality of work (notably on wages) than on the quantity. In particular, theory may not provide much insight on whether increased trade will help countries achieve the goal of full employment or the target of low unemployment. In terms of the quality of employment, theory suggests that poor and unskilled workers in developing countries—the countries that are the focus on the SDGs—may gain, and those in developed countries may lose as a result of trade. Theory gives us relatively little direction, however, on other aspects of employment quality, such as decent working conditions, forced and child labor, women, youth, and workers with disabilities, and how these might be improved or eliminated through trade.

### **7.3.2 Adjusting to Comparative Advantage**

There are trade theorists who have sought to model the transition process in terms of how it affects employment. Since the late 1990s, several theories have been put forward on the effect of trade on unemployment by incorporating theories of job search, and worker/employer matching as part of labor market efficiency. However, this work is still in its infancy and has generated results that are sometimes ambiguous and tend to confirm employment outcomes that are already suggested by the standard theories of comparative advantage and factor abundance. Experts working in this area have themselves noted quite recently that “the role that globalization plays in enhancing or hampering the performance of the labor market is not well understood” (Davidson et al. 2012: 429).

Davidson, Martin, and Matusz (1999) developed a model of trade that includes unemployment generated from search costs and frictions (i.e., “search unemployment”). A key basis for comparative advantage is differences in search technologies and break up rates. The model assumes that a larger country has a more efficient labor market and therefore a lower long-term rate of unemployment. The model indicates that when a large, capital-abundant country like the US trades with a small, labor-abundant country (i.e., in the developing world), unemployment in the former will increase.

Moore and Ranjan (2005) developed a similar model, but comparative advantage is tied directly to differences in factor endowments, notably differences in skilled and unskilled workers. The result is that trade opening results in reduced unemployment for skilled workers, but increased unemployment for unskilled workers. The model is viewed from the perspective of a developed country, such as the US, and thus generates results similar to what would be expected for the theory of factor abundance.



Davidson et al. (2012) drew on new–new trade theory and the important differences between exporting and non-exporting firms to develop a model of labor transition. The authors assumed an initial situation of “cross-skill matching” (CSM), a type of skills mismatch in which some high-skilled workers are employed in low-tech firms prior to trade opening, resulting in underemployment.<sup>3</sup> As a result of trade, CSM may decline as an industry moves to a system of “ex-post segmentation” (EPS), in which the more productive exporting firms can pay higher wages and attract high-skilled workers away from low-tech firms. Low-tech firms lose out and their segment shrinks, reducing the bargaining power and wages of low-skilled workers. The model appears designed from an industrial country perspective as the assumption is that high-skilled, high-tech industries will benefit from trade. The results are in line with the Heckscher–Ohlin theory as it applies to an advanced country in that high-skilled workers will benefit and the low skilled will lose. It is possible that the system does not transition from CSM to EPS and skill mismatches persist. Furthermore, liberalization affects not only exporters, but also import-competing firms and industries. Import competition can reduce the earnings gap between high- and low-tech firms and shift the labor market situation to CSM, if it was initially at EPS.

Dutt, Mitra, and Ranjan (2009) presented a model that can account for whether trade is based on productivity differences, following Ricardo, or on differences in factor endowments, as suggested by Heckscher–Ohlin. Their model predicts that differences in factor endowments will result in a decrease in unemployment in a labor-abundant country and an increase in a labor-scarce country, results that would be expected from the underlying trade model. The higher unemployment is based on search friction and exists only in the short term. However, the authors show that trade based on differences in productivity will reduce unemployment unambiguously, that is, for either a labor-scarce or labor-abundant country. Trade will result in a rapid reallocation of labor from low to high productivity firms through aggressive job search efforts and effective job posting. Their empirical evidence suggests productivity differences have a greater role in explaining trade than endowments, and thus overall unemployment is expected to decline with trade opening.

Helpman, Itskhoki, and Redding (2010) developed a model with heterogeneity in firm productivity, following Melitz (2003), and labor market friction. As a result of trade opening, more productive firms will hire more skilled workers to whom they are willing to offer a higher wage. However, more intensive screening and higher wages will limit

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<sup>3</sup> The model is based on a single high- or low-skilled manager for each firm, although the manager is said to be representative of high- and low-skilled workers in the firm.

the extent of new hiring and will tend to raise overall unemployment. At the same time, net hiring will be affected by labor market tightness and can either support an overall increase in unemployment or result in a decrease, thus leaving the results ambiguous. Helpman and Itskhoki (2010) developed a similar model that focuses on differences in labor market frictions between homogeneous and differentiated goods sectors.<sup>4</sup> If labor market rigidities, which give rise to friction, are higher in the differentiated sector, the unemployment rate will rise as a result of trade opening. However, the unemployment rate will fall if friction is lower initially or decreases over time.

Much of the analysis has sought to figure out how easy or difficult it might be for workers to move from declining to rising industries. New jobs might require different skills and moving to a different location. Moving jobs means knowing where the new jobs might be found and requires adequate information. Finally, labor market institutions might have a role in shaping the types of transitions to be made. Generous unemployment and social benefits might dull the incentives for workers to transition quickly, as might a lack of wage flexibility.

Wood (1995) suggested that flexibility in the US might result in lower wages, but little or no increase in unemployment for low-skilled workers. In contrast, in Europe, where social and labor market institutions were more developed and there is less flexibility, workers in declining industries were more likely to face a period of unemployment, instead of lower wages.

### 7.3.3 Changes in Comparative Advantage

Comparative advantage is not static but changes over time. This is true of both advanced countries, such as the US and those in Europe, and even more so for countries in the process of developing and industrializing. Just as trade opening accentuates comparative advantage and causes shifts in demand for workers and their skills across sectors and firms, so too do changes in comparative advantage. Indeed, improvement in the skill level of labor is one of the important sources, along with technology, of change in comparative advantage. As a result, the types of goods and services that countries export will change over the course of the 15-year coverage period of the SDGs and will do so even if there is no further liberalization of trade regimes.

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<sup>4</sup> In the differentiated sector, firms are heterogeneous such that they have power in the product market (monopolistic competition) and bargain with workers for wages in the labor market.

In earlier work, Das (1998) noted significant changes in revealed comparative advantage (RCA) in Asia between 1980 and 1993, when considerable structural change was taking place. Across the four large Association of Southeast Asian Nations (ASEAN) countries, the RCA was high, but fell significantly in mineral- and agricultural-intensive exports.<sup>5</sup> Meanwhile, the RCA was lower, but rose roughly fivefold in each of the categories of technology-intensive, capital-intensive, and human capital-intensive exports. For a more advanced economic group of newly industrializing economies in East Asia, the RCA was low and remained so in agriculture and minerals, but was higher and increased further in technology-intensive and capital-intensive sectors.<sup>6</sup> The most significant change in this group was in the labor-intensive sectors, where the RCA fell by more than half. Clearly, the countries were moving up the value chain in goods production and altering their comparative advantage.

Using a significantly longer time frame and focusing on workers' skills, Wolff (2003) found important changes in the content of US exports and imports. In the half-century from 1947 to 1996, US comparative advantage was in high cognitive and interactive skills and low in motor skills; furthermore, the gap in terms of the exports and imports that embody these skills widened over time. Exports were over time high in the employment of knowledge and data workers, whereas the labor content of imports stressed goods workers. This gap, too, increased over time. Following the Leontief paradox, imports were more capital- and machinery-intensive than US exports; in this case, however, the gap fell over time. Somewhat surprisingly, the research and development content of imports surpassed that of exports during this 50-year period.

Conceptually and empirically, higher value goods correlate with higher economic growth (Hausmann, Hwang, and Rodrik 2007). Thus, countries seeking to grow faster will try to alter their comparative advantage in the direction of higher value goods, commonly expressed as efforts in "moving up the value chain." There remains considerable debate, however, regarding the extent to which a country should conform to its existing comparative advantage or defy it and engineer a move to a more sophisticated level. Justin Lin, former chief economist at the World Bank, has taken the former position, whereas Ha-Joon Chang, an industrial policy advocate, has argued for the latter (Lin and Chang 2009).

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<sup>5</sup> The four ASEAN countries are Indonesia, Malaysia, the Philippines, and Thailand.

<sup>6</sup> The four newly industrializing economies are Hong Kong, China; the Republic of Korea; Singapore; and Taipei, China.

### 7.3.4 Global Production Shifts in Manufacturing

The distribution of manufacturing has seen a significant shift over the past 25 years. “Industrialized” countries are so named because of their industrial activity, including manufacturing. But an increasing proportion of manufacturing is taking place in the developing or “industrializing” world. The share of global manufacturing produced in developing countries doubled from 18% to 36% between 1990 and 2014 (UNIDO 2015). Much of that increase is due to the People’s Republic of China (PRC), which by itself accounts for half of total manufacturing in developing countries, rising from 16% to 51% over the same period (UNIDO 2015). These shifts have been facilitated by trade and have resulted in job creation in developing countries and a redistribution of global manufacturing employment.

The shifts result from the increased competitiveness of manufacturing in developing countries, but are also caused by changes in the nature of global production. Firms from developed countries have moved production offshore to take advantage of lower costs, including wages, and in some cases also to be closer to markets. Offshoring has been facilitated in no small measure by the expanded (geographic) coverage, use, and functionality of the internet, which has made the coordination of global value chains (GVCs) and production networks possible. For example, the Apple iPhone is designed in the US, its key components are produced in East Asia (the Republic of Korea, Japan, and other countries) and the final product is assembled in the south of the PRC. The phones are marketed and sold not only in those countries, but also elsewhere.

Increased foreign direct investment (FDI) flows to developing countries and the geographic fragmentation of production based on GVCs are likely to affect the gains from trade and employment in two ways. First, the shifts create manufacturing jobs in developing countries. This is good for those countries, although it will negatively affect jobs in developed countries. Second, the fracturing of production may result in an intensification of specialization and some change in its nature. Comparative advantage takes place “across tasks rather than industries,” according to recent thinking on how GVCs affect trade (Shingal 2015).<sup>7</sup> Nonetheless, increased specialization can, according to standard trade theory, help to raise productivity, welfare, and economic growth, which in turn can have a positive effect on job creation.

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<sup>7</sup> The implications for trade theory of a shift from industries to “tasks” may already be partly accounted for by the recent emphasis on modeling intra-sector trade and the even more recent emphasis on firm heterogeneity.

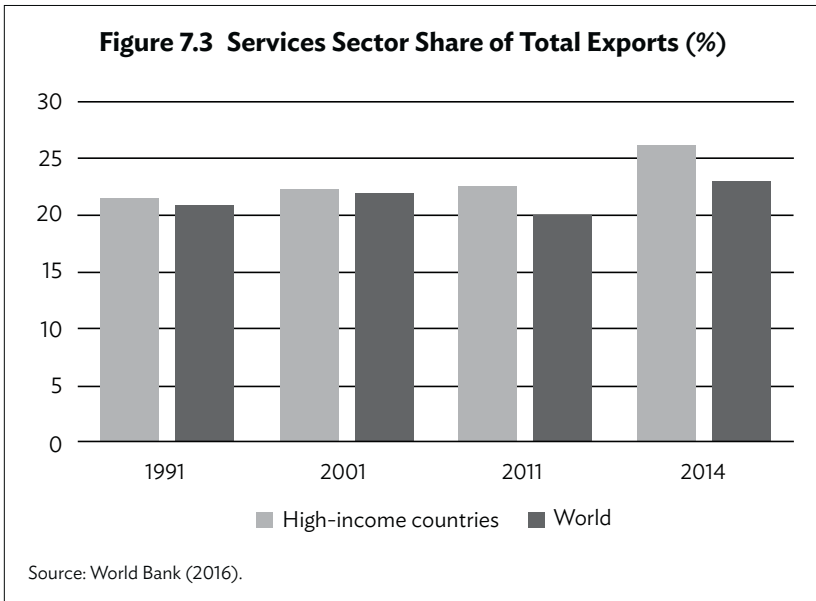
Furthermore, because GVCs intensify comparative advantage, the same trade-adjusting effects apply but at a deeper level, of occupations instead of industries. Job losses and job creation will be experienced as globalization increases. The process can generate unemployment that can be alleviated with the adjustment of workers and their skills, just as in standard models. However, low-skilled workers may be affected most in both developed and developing countries (IMF 2013).

The countries that will gain will be those that can attract investment that exploits the country's competitive advantage. FDI will be attracted by industrial sites that are well serviced by utilities and infrastructure and provide access to a pool of workers with the requisite skills. However, because production is part of GVCs, equally important will be the capacity and the procedures to move goods quickly and efficiently into and out of the country. The PRC's export processing zones have provided these supporting arrangements and help to explain why the country has been so effective in attracting investment. This investment, in turn, has greatly expanded export-based manufacturing employment.

### **7.3.5 Outsourcing Services**

The services sector is the most significant of the three main sectors in nearly all countries. In addition, its importance, in terms of both output and employment, continues to grow. Globally, services account for two-thirds of total value added, with a higher share in high-income countries. The share of the workforce employed in the services sector was 63% in developed countries in 1991, and is estimated to reach 75% in 2017. The share in developing countries is lower, but still significant. Services' share of global employment is estimated to surpass 50% for the first time in 2017 (ILO 2015b).

Services exports have also been rising. In 1991, 21% of exports both globally and for the high-income countries were services. By 2014, that figure had risen to 26% in high-income countries (a 21% increase) and 23% globally (Figure 7.3). In recent decades, services trade has been bolstered by the rapidly expanded use and functionality of the internet. Call centers offering support services to clients far away have expanded enormously since the 1990s, driven by significant wage differentials. Billing, client account management (e.g., credit cards), and medical transcription are other services traded that are not based on direct voice interaction. Some developing countries have excelled in services exports; the sector accounts for 31% of exports for the Philippines and 33% for India (World Bank 2016). Both countries have built significant business process outsourcing (BPO) sectors in recent decades, although they also have large populations working overseas (mode 4).



Services are different from goods; likewise, trade in services differs from goods trade. Goods are tangible objects that move physically across borders. Services are activities rendered by a supplier to a client, and therefore the supplier and the client often engage in direct interaction. Services are normally divided into four modes, depending on how, and indeed where, that interaction takes place. The four modes are as follows: (i) the supplier creates the service in its country and sends it to a client abroad (e.g., engineering drawings); (ii) the client moves to another country to receive the service (e.g., tourism); (iii) the supplier sets up a presence in a foreign country (e.g., a foreign bank); and (iv) a person supplying the service moves to the country of the client (e.g., a migrant construction worker). All services are potentially tradable because the supplier or the client can move to provide or receive the service in another country.

Only in the first mode is the service itself moving across the border, and while it may move in physical form (e.g., a hard copy of engineering drawings), it often moves electronically in nonphysical form. In the other cases, there is a movement of people or investment. Given differences in the nature of goods versus services, the barriers to trade are also different. Goods can be controlled by tariffs and physical restrictions (quotas), along with nontariff barriers. Tariffs do not apply to services, except those sent in physical form, but instead services are

controlled by limiting the movement of people and investments, and by regulations restricting the right of foreigners to conduct business.

Copeland and Mattoo (2008) argued that domestic regulation of sectors plays a strong role in determining trade access, as opposed to tariffs, as in the case of goods. However, they do find that standard approaches to modeling trade in goods can be useful for modeling services. This includes welfare gains and losses as a result of trade opening, and how comparative advantage stemming from factor endowments can help explain the structure of a country's services trade.

The employment implications of services trade vary according to the mode. Mode 1 activity, in which the service moves across the border (i.e., without people needing to move), is similar to goods trade; liberalization should see specializations between trading countries and demand for labor (and wages) increasing in subsectors with a comparative advantage and decreasing in less competitive subsectors. Whether this plays out in reality remains to be seen, however. India's penetration into the BPO services market has created jobs in India, but whether the US has been able to provide more high-end services to India requires empirical verification. The adjustment costs need to be considered, as in goods trade. "Bangalored" service workers may need assistance to retrain for new jobs.<sup>8</sup>

For other modes, the impact on employment may be more direct. In mode 4, workers move across the border to provide services and form a source of worker migration, which is considerable in some countries, such as the Philippines and Tajikistan, where jobs are scarce. Mode 3 involves services FDI that will create local employment and has similar employment ramifications as goods FDI. However, mode 3 normally also involves the movement of some senior and professional staff to run the foreign affiliates. The two key employment adjustment issues are (i) whether workers from a domestic firm are now shifting to foreign affiliates (in the same country), and (ii) whether services previously filled through mode 1 are now being filled through mode 3 and are thus causing a shift of jobs from the service firm's country of origin to the country of the new branch office.

Copeland and Mattoo (2008) considered the case of a lawyer moving to another country to provide legal services. As a one-way movement, there is an employment and welfare gain to the receiving country and a loss to the sending country, although if remittances are sent or carried back, the loss to the sending country may be minimized.

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<sup>8</sup> The term "Bangalored" refers to job loss due to a service function being outsourced to a location in another country, such as Bangalore, a major hub for India's BPO industry.

Why the example is modeled as only one-way instead of two-way trade as in the case of goods examples is not clear, and a two-way trade model may alter the relative gains and losses.

Van der Marel (2011) developed and tested a model of comparative advantage in services trade. A basic premise of the model is that services are different from goods in terms of the factors that determine competitiveness. Services require high-skilled workers and information and communications-related capital and are also more dependent on quality regulatory and governance factors. Mid-skilled workers can also be a supporting factor for services trade. Part of the intuition is that trust, for contract enforcement and to meet more detailed consumer requirements, can play an important role, but of course is hard to measure and therefore hard to test. Employment effects, aside from the importance of skill levels, are not provided in the model, nor are the transitional elements when a country opens up and liberalizes services trade with other countries.

## **7.4 Evidence on Employment and Job Quality under Liberalized Trade**

As trade openness has increased during recent decades, a look at the past provides insights into how further openness may affect employment during the SDG period. Empirical research in this regard can present major methodological challenges as it involves isolating the effects of trade openness from other policy and environmental variables. As a result, some of the better examples are those in which a major new trade deal has been implemented and in which economists have attempted to measure the employment impacts.

The other challenge in assessing empirical evidence is to draw out the qualitative side to see what changes have occurred in wage levels and the relative demand for skilled and unskilled labor. As we saw, this impact is highlighted in trade theory more so than the quantitative impacts. In this section, we survey some of the evidence on both the quantitative and qualitative aspects of more open trade.

### **7.4.1 Employment Levels**

Some researchers have analyzed data on a large cross-section of countries to consider the relationship between openness (or protectionism) on the one hand and the unemployment rate on the other. Dutt, Mitra, and Rajan (2009) tested the correlation between trade protection and unemployment across 92 countries, finding a positive and significant



correlation; that is, countries with a less liberal trade regime have higher unemployment. Their results are robust across specifications, with and without instrumental variables.

Felbermayr, Prat, and Schmerer (2009) generated similar results using a similar approach for two samples of countries. They estimated a sample of 20 Organisation for Economic Co-operation and Development countries from 1980 to 2003 using 5-year averages, and then a larger set of 62 countries from 1990 to 2006, also using 5-year averages. They found that open countries have lower unemployment rates and analyzed the long-run effects by netting out the short-term effects of business cycles. They further found that employment is affected via total factor productivity and that differences in institutions do not appear to affect trade openness impacts on the labor market. This is interesting given that some commentators conclude that the difference in European (higher) and US (lower) unemployment stems from Europe's more complex and restrictive labor market institutions.

Along with studies examining a large group of countries, other studies have focused on single countries or pairs of countries for more specific effects. In particular, the lowering of trade barriers, along with a revolution in the use of information and communications technology to coordinate the fragmentation of production into GVCs, has allowed large enterprises to shift production from developed to developing countries. This has allowed for increases in manufacturing employment in poorer countries and a decline in richer countries. Nowhere is this change more evident than in the PRC.

The PRC joined the World Trade Organization (WTO) in late 2001 and was given until late 2006 to fulfill its commitments. Data from the later part of the commitment period and extending afterward show a significant increase in manufacturing jobs. Employment in the sector rose by 20 million workers in only 4 years, from 56.7 million in 2004 to 77.3 million in 2008. While tracking jobs related to exports is difficult because an enterprise may produce for both the domestic and international markets, estimates suggest that employment in manufacturing related to exports rose from 15.0 million to 17.3 million over the same period (Cai and Du 2014). Export-oriented manufacturing has been more labor-intensive than domestic manufacturing, and indeed, one of the factors attracting foreign firms to set up in the PRC is the ability to take advantage of low-cost labor. Dividing 30 manufacturing subsectors into quintiles from least to most export oriented, Cai and Du (2014) found that the most export-oriented quintile used 3.5 times more workers per unit of capital than the least export-oriented quintile. Wages have been rising rapidly, however, and as a result, the capital intensity across both exports and domestically oriented sectors increased between 2004 and 2008. The

PRC has also been making efforts to rebalance somewhat from foreign to domestic demand, and as a result, the share of production destined for exports has declined over time.

The flip side of this is the negative employment impacts on manufacturing in the US and other developed economies. Autor et al. (2013) found a range of negative employment impacts on US manufacturing workers that have faced a surge in competition from the PRC. Tracking workers between 1992 and 2007, they found that workers in these industries had lower earnings over time and were more likely to leave the labor force and accept social security than workers in industries not affected by competition from the PRC. Workers in industries that faced competition from the PRC were less likely to stay with the same employer and more likely to leave their subsector or the manufacturing industry entirely. Low-wage workers were much more affected than high-wage workers, who were less likely to be laid off and experienced only a minimal loss in earnings when transitioning to other firms. The differences were substantial. A worker in a subsector at the 75th percentile of trade exposure to the PRC had income that was 46% below that of a worker in a subsector at the 25th percentile of trade exposure. Overall, the number of workers in US manufacturing has fallen dramatically over 2 decades, from 18.3 million in 1991 to 11.4 million in 2011 (Autor et al. 2013).

In 1990, the US and Mexico agreed to enter into a free trade agreement (FTA). As a result, the Canada–US Free Trade Agreement was expanded into the North American Free Trade Agreement (NAFTA) in 1994. The agreement was the subject of considerable debate, particularly as to whether it would threaten US jobs. Hinojosa-Ojeda et al. (2000) estimated employment effects with US job losses amounting to 37,000 annually as a result of increased trade with Mexico, and 57,000 annually as a result of trade with Canada for the period 1990–1997. These are considered small given that the US economy creates 200,000 jobs each month.<sup>9</sup>

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<sup>9</sup> Several years earlier, in 1989, the Canada–US FTA came into effect. Comparing the pre-FTA period of 1980–1986 to the FTA period of 1989–1996, Treffer (2004) focused on the impacts in Canada and found a 5% decline in overall Canadian manufacturing employment (about 100,000 jobs). However, he suggested that these losses were short term as there was no change in Canada's employment rate between 1988 and 2002 of 62%. Furthermore, manufacturing employment rose overall by 9.1% in Canada during the same period, whereas it fell in the US, Japan, and some other industrialized countries. The FTA also generated significant labor productivity gains of 14%–15% in most-impacted, import-competing, and export-oriented industries. In import-competing sectors, the gains were mostly the result of the exit of low-productivity plants, as suggested by new–new trade theory. Overall welfare in Canada probably increased, according to the study.

In Mexico, the creation of NAFTA in 1994 resulted in a large increase in manufacturing employment in the maquiladora, an export-oriented platform established in 1965 that benefited from the new trade deal. An estimated 800,000 manufacturing jobs were created in the maquiladora between 1994 and 2000, at which point employment peaked. Thereafter employment fell, but was still 550,000 higher in 2003 than before NAFTA. Non-maquiladora manufacturing jobs fell dramatically during the tequila (peso) crisis of 1994–1995, but recovered significantly and also peaked in 2000. They fell again thereafter, and by 2003, non-maquiladora employment was about 1.3 million, or about 100,000 fewer than before NAFTA.

## 7.4.2 Sector Shifts

There are also important trade-induced effects on employment between the PRC and Hong Kong, China. Many of the latter's manufacturing firms in clothing and textiles, plastic toys, watches, and electronics moved to the mainland from the late 1970s to take advantage of lower wages and in response to competition from emerging producers in the Republic of Korea; Taipei, China; and elsewhere. This shift was the result of competition, but also the opening to trade and investment by the PRC, notably in neighboring Guangdong province. The share of manufacturing in GDP in Hong Kong, China fell from just under 25% in 1980 to only 1.3% by 2014. The fall in employment was even more dramatic, with the manufacturing sector employing 46% of the workforce in 1980, but dwindling to less than 4% by 2009.<sup>10</sup>

As is well known, Hong Kong, China shifted its own and other manufacturing firms operating in the PRC. Services firms also support the domestic economy, both in externally oriented activities, such as finance, logistics, and tourism, as well as domestic activities, such as the hospitality sector. Regarding trade, the decline in manufacturing has meant a decline in merchandise exports and an increase in imports to the point where nearly all locally consumed goods come from abroad. This merchandise deficit imbalance is more than offset by high services exports, with the latter's share in GDP more than doubling from 9.3% in 2000 to 19.9% in 2009 and tripling in real terms. With imports of goods and exports of services, the island is a net exporter overall, and net exports accounted for 7.2% of GDP in 2009 (Vere 2014).

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<sup>10</sup> The figures for 1980 for GDP and employment shares are from Tao and Wong (2001). The GDP share for 2014 is from the World Bank (2016), and the employment share for 2009 is from Vere (2014).

The workforce has followed this structural change, with services accounting for 88% of total employment in 2009. Unemployment has generally been low during the long structural transformation over the past 3–4 decades, although it hit a high spell following the East Asian financial crisis. The jobless rate ranged between 5% and 8% from the crisis until the mid-2000s, but has declined since then and has been below 3.5% since 2011 (World Bank 2016). The structural changes have been felt more in terms of wage levels than employment levels. Inflation in the latter part of the 2000s resulted in a decline in real wages for low-skilled workers, while high-skilled workers have done well. This has led to increased wage inequality over the entire workforce.

Whereas Hong Kong, China moved out of manufacturing, Indonesia was unable to attract increased investment in that sector despite abundant low-wage labor (Aswicahyono et al. 2014).<sup>11</sup> Garments and textiles were key areas of export competitiveness and employment growth in Indonesia in the 1980s, and by 1990 accounted for 25% of total employment. Together with wood and furniture, these light industries accounted for just below 50% of total employment. Following the Asian crisis of 1997, the country was not able to maintain this momentum despite a large supply of unskilled and low-skilled labor available from the countryside. Investment and exports from these sectors were stifled by a weak investment climate, poor infrastructure, currency appreciation, and labor market regulations that reduced flexibility and pushed up costs. The country was less appealing to foreign investors, who focused elsewhere, including the PRC and Viet Nam. Export growth shifted to chemicals and heavy industries that were much less employment-rich. By 2009, the share of employment in light manufacturing fell to 31%, and in the textiles and garments subsector to 17%. Much of the employment has shifted to low-skilled services. The unemployment rate since the Asian crisis has been decidedly higher than in precrisis years, peaking at 11.2% in 2005, but falling gradually to 6.2% in 2014 (World Bank 2016). The figures mask considerable underemployment in a country without unemployment insurance or adequate social security. The Indonesian case illustrates how weak export performance and barriers to investment in labor-intensive export sectors can hurt employment outcomes.

Efforts have also been made to estimate the effects on employment of two significant trade and investment deals. Carrere, Grujovic, and Robert-Nicoud (2015) estimated the possible effects of increased liberalization under the Transatlantic Trade and Investment Partnership (TTIP) and the Trans-Pacific Partnership (TPP). They found that the TTIP will likely

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<sup>11</sup> This paragraph on Indonesia draws extensively on that source.

result in a 1.1% increase in US unemployment from a base of 5.9% and a fall in most European countries, with the exception of Belgium, Italy, and the Netherlands. Those countries that will see an unemployment rise have high frictions due to firm adjustments. The deal should raise wages in all countries, according to the results. For the TPP, the unemployment rate is estimated to fall for all countries participating in the agreement and to rise slightly in countries that are not included. All participant countries would also see a rise in real wages, while in other countries the wages are expected to fall, but the change is likely to stay close to zero.

### **7.4.3 Quality of Jobs, including Formal versus Informal Employment**

SDG 8 calls for countries to decrease informal nonagricultural employment. Theoretically, it is unclear what impact trade might have on informality. On the positive side, there may be factors that encourage formalization as firms are better organized and put on a stable footing to improve labor conditions to compete against imports and to export. On the negative side, trade puts pressure on firms to cut costs and they do so by shifting work from their own or their suppliers' formal operations to informal enterprises. Research has found mixed evidence on the link between trade and informality.

Goldberg and Pavcnik (2003) examined the impact of trade opening in the 1980s and 1990s on informal employment in Colombia and Brazil. They found no relationship in the case of Brazil; trade opening neither increased nor decreased informality. For Colombia, they found weak evidence that informality increased, but this depended on labor market institutions, with the increase in informality occurring after reforms that increased labor market flexibility and prior to trade reform. The impact of trade openness may depend on each country's economic structure. However, differences have also been found in studies of the same country. Early work by Maloney (1998) indicated that trade opening in Mexico after 1990 resulted in a shift of workers from the formal to the informal economy. However, more recent work by Yahmed and Bombarda (2016) found that formal employment increased relative to informal employment and self-employment in the tradable sector following the enactment of NAFTA.

The impact of trade on more egregious labor conditions, such as child and forced labor, which are part of SDG 8, has been less studied. Edmonds and Pavcnik (2004) found a negative relationship between trade openness and child labor, suggesting that greater trade is associated with lower levels of child labor. This association is significant when country income level is not considered. When it is, the magnitude of the relationship falls substantially and the correlation becomes

insignificant, suggesting that the level of child labor is determined by country income level, not openness to trade. This result holds when estimating different country groups, considering trade between high- and low-income countries, and focusing on the exports of low-skilled goods from low-income countries. The results may support the idea that the welfare gains from trade, by raising country income, may contribute to reducing child labor.

SDG 8 also calls for the elimination of forced labor, modern slavery, and human trafficking. The ILO estimates that there are 21 million people in forced labor, 90% of which is in the private economy and 10% under state control, for example in prisons under conditions that contravene ILO standards or under military and rebel groups. Of the 90% of forced labor in the private economy, 22% comprises sexual exploitation, and the remaining 68% is found in various sectors, including agriculture, construction, domestic work, and manufacturing (ILO 2012).<sup>12</sup> The author is not aware of any studies that have sought to test the link between trade and forced labor.

## 7.5 Role of Policy

Greater trade openness will provide opportunities in many developing countries for greater productive specialization that should boost efficiency and support welfare. However, theory and evidence suggest that the benefits of trade will not accrue without important shifts in the sector composition of output and exports across individual countries. These shifts will raise employment demand in rising sectors and reduce demand in declining ones. A major role of policy is to support these transitions so that workers are aware of where the new jobs are and are given the opportunity to acquire the skills to secure those jobs.

### 7.5.1 Labor Market Policies

A country's labor market policies can support the trade adjustment process and ease the transition of workers from declining to rising sectors. Policies and regulations that create a flexible labor market are particularly important. These measures reduce the expense for employers of laying-off workers in declining sectors and ease the hiring process in expanding sectors. Workers, too, require transition mechanisms. These include labor market information systems about contemporary vacancies and long-term labor and skills demands that are best provided through an

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<sup>12</sup> The ILO estimate is derived from data for 2002 and 2011.

active and accessible public employment service. Knowing that new jobs are being created and where they can be found is important for workers who realize they need to shift jobs. In addition, information can be provided on opportunities to re-skill or up-skill, supported by career counseling. Finally, making employment benefits or entitlements, such as pensions, portable can reduce the risks for workers making a proactive decision to switch sectors. These general labor market policies can be enhanced by specific trade adjustment assistance.

## 7.5.2 Trade Adjustment Assistance

Governments can lower adjustment costs through programs that assist workers in transitioning from declining to expanding sectors or firms. Such support is justified on both efficiency and distributional grounds. The net gain from trade to the economy as a whole will be higher if the cost is reduced. At the same time, however, adjustment involves private costs that fall disproportionately on a relatively small number of workers. Government interventions to reduce these costs will thus moderate the distributional effects.

There are multiple ways in which support can be provided. The most direct is assistance to workers who lose their jobs (or otherwise suffer) from increased import competition. This is discussed further below. Other types of support target producers who face import competition, either enterprises, including small and medium-sized enterprises, or farmers. Here the support may be directed to increase competitiveness, if possible, or switch product lines, including alternative crops to grow or livestock to raise.<sup>13</sup> Successful programs may move a firm or sector from competing against imports to exporting itself.

Assistance for workers can be provided in several ways: (i) income support, such as extended or supplemented unemployment benefits; (ii) assistance to retain access to health care or other social security programs; (iii) job search support to help workers find reemployment; and (iv) retraining to increase the employability of workers in other jobs or sectors. The first two are passive labor market policies, and the latter two are active labor market policies. In some cases, these worker-oriented programs are bundled together with enterprise assistance under the same legislation or umbrella program.

The two best-known programs in the developed world are respectively the US Trade Adjustment Assistance program and the

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<sup>13</sup> Taipei, China provides an interesting case of agricultural adjustment. When the sugarcane industry declined, the government supported the development of an orchid industry, which has become the largest exporter in the world by volume. Rodrik (2004) described some aspects of this shift and the support it was given by industrial policy.

European Globalization Adjustment Fund (EGF) of the European Union (EU). Programs also operate in Canada, Mexico, and Australia.

The US has a long history of supporting workers affected by liberalized trade. A program set up by President John Kennedy under the Trade Expansion Act of 1962 offered passive assistance to workers. Active assistance in the form of retraining was added under the Trade Act of 1974. Trade adjustment assistance has taken various forms and been included in other trade legislation and programs. The workers' component is called Trade Adjustment Assistance for Workers and supports job search, training, and income support. The program applies to those who have lost their jobs due to business closure from import competition or due to the offshoring of production. The income support component can support both the unemployed and those workers who experienced a reduction in wages or working hours. An annual average of over 85,000 workers were certified for assistance from 2012 to 2014 (DOL 2015).

In Europe, the EGF was established in 2007 and has been extended to operate until 2020. It focuses solely on workers and does not provide support to firms to stay in business or to restructure to meet import competition. Funds are available from the EGF and can be accessed for programs proposed and organized by member states. The EGF will fund up to 60% of the cost of a program, with the remaining 40% provided by national governments. In some cases, other EU funds may provide some of the additional funding. The focus is on mass layoffs as a result of a firm closure due to the offshoring of the operations to another country. A minimum of 500 workers needs to be laid off by a firm, a group of firms in a value chain, or in a sector or neighboring regions. It supports the costs of programs on job search, career counseling, coaching, (re) training, and education. It can also help unemployed workers set up small businesses. Funds can be used to provide training allowances, subsistence allowances, and relocation allowances. However, they cannot be used to cofinance unemployment benefits (EU 2014).

In its first 7 years of operation (2007–2013), the EGF provided funding to support 50,264 laid off workers across the EU. Denmark received the most support, with assistance provided to 9,390 workers. Given the large size of the EU workforce spread across a large number of member countries (28), the assistance may seem small.<sup>14</sup> However, countries may have their own trade adjustment programs that are not funded by the EGF.

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<sup>14</sup> Over a period of 7 years, 50,264 workers across 28 states means an average of 360 workers were assisted per country per year. Eight of the 28 states did not apply for assistance, including several countries that joined the EU near the end of the 7-year period. The EGF also supports workers affected by the global financial crisis of 2008–2009. An additional 55,942 workers were assisted in this regard (EU 2014).



### 7.5.3 Design and Implementation of Trade Agreements

Trade agreements can be designed in such a way as to cushion the impact on workers and businesses. One category of measures gives signatories time to adjust to an impending liberalization. A second category provides safeguards in trade agreements to protect workers following implementation.

Agreements that provide for a gradual reduction in trade barriers allow time either for firms to upgrade to face the competition or for programs to assist workers to transition. Early announcement of the agreement, with implementation to follow, also provides adjustment time. These measures can cushion the impact of liberalization and can give players a head start in adjusting to the changes (Francois, Jensen, and Peters 2011).

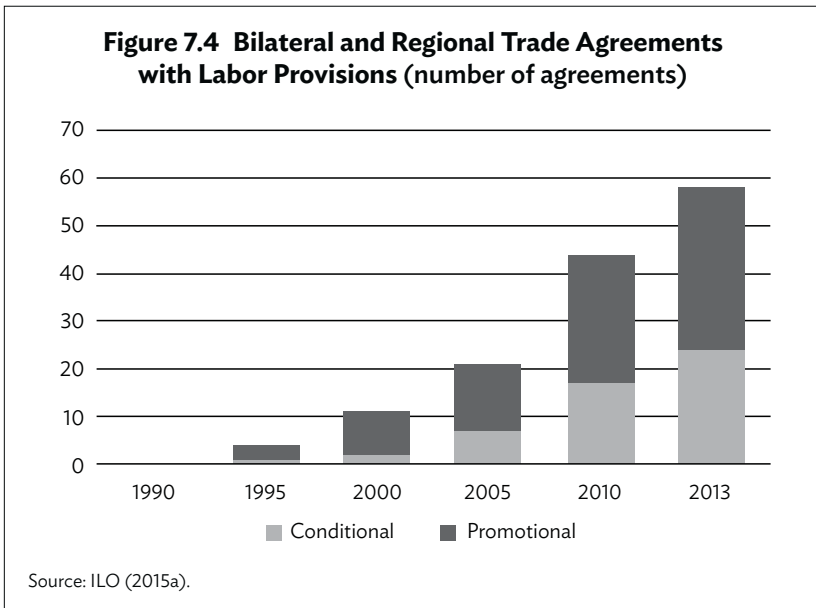
Trading partners are increasingly including labor provisions in trade agreements. The provisions are designed to protect workers as countries open up to more intense trade interaction. They can help to prevent a “race to the bottom,” in which countries might seek to gain a competitive advantage through low labor standards.

The inclusion of such provisions has grown rapidly over the past 2 decades (ILO 2015). In 1995, only four trade agreements globally included labor provisions—a decade later, that figure had jumped more than fivefold to 21, and further to 58 by mid-2013 (Figure 7.4). Of course, the number of trade agreements in place has also risen over the past 2 decades. Still, the 58 agreements represent just under a quarter of the 248 trade agreements that were in force and notified to the WTO. Out of 190 countries that are signatories to trade agreements, some 120 are party to at least one agreement that includes labor provisions. In addition, the number of agreements with labor provisions has accelerated in recent years. During 2011–2015, a total of 57% of new trade agreements contained labor provisions, which is nearly double the share (31%) in the previous 5-year period.<sup>15</sup>

Most of these provisions focus on cooperation and monitoring, or what the ILO calls “promotional” elements. Still, about 40% of agreements include compliance and enforcement mechanisms with specific economic measures that can be taken if a party is in breach of the provisions. NAFTA, which came into effect in 1994, was the first agreement to include a compliance mechanism. The use of a dispute mechanism is rare, and only one case, involving recourse to economic sanctions, has gone to arbitration. In other instances, matters may be discussed and resolved beforehand (ILO 2016).

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<sup>15</sup> This analysis is based on 77 new trade agreements signed during 2006–2010 and 54 agreements in 2011–2015 (ILO 2016).



It may be difficult to determine whether labor provisions are having an impact on labor market outcomes, given both the recent nature of many provisions and the difficulty in determining causality. A recent study by the ILO (2016) found that the provisions were linked to higher labor force participation, especially for women, but did not appear to impact other variables, including wages, the share of vulnerable employment, and the gender gap in these two variables. The study found that labor provision did not lead to a deterioration in standards and did not prompt trade diversion to countries with lower standards. Thus, labor provisions may be playing a role in preventing a race to the bottom and providing general support to SDG 8.

### 7.5.4 Skills and Education to Enhance the Benefits from Trade

The trade adjustment programs that some governments have put in place are generally reactive. They may include measures that are considered active labor market policy, but because they provide support when workers are already affected or about to be affected by trade-related sector adjustment, they are reacting to changes in labor demand. Governments can take a more proactive approach by both building comparative advantage and anticipating shifting skill demands.

Labor is an important aspect of building comparative advantage in trade. As labor markets tighten and as income and wages rise, less-developed countries, especially middle-income ones, need to secure new aspects of competitiveness in the global marketplace. A failure to do so may result in getting caught in the middle-income trap. That is, they may lose competitiveness in lower-value (low-wage) goods and yet not be able to move to higher-value activities in which higher productivity can compensate for rising wages. While the ability to raise product value and productivity is influenced by a myriad of factors at the enterprise level, human resources are one of the key elements.

Therefore, securing the benefits from trade, both at the level of aggregate welfare and in terms of generating positive labor market outcomes, may require an active and anticipatory approach to education and skills training. For middle-income countries and those striving to achieve middle-income status, this requires a broad-based improvement in the human capital of the workforce and those who will be entering the workforce in the future. For high-income countries, which are not particularly the focus of the SDGs but whose labor markets are affected by trade, this means greater anticipation of future skills needs. In particular, developed countries are losing competitiveness in certain areas of manufacturing and need to transition their workforce skills profiles to higher-value services, including those that are at either end of the product value chain. These ends of the value chain include research, development, design and prototyping in the product development stage, and marketing, distribution, and service support at the post-production stage.

Countries that are more attuned to shifting skill requirements and that can be proactive instead of reactive are more likely to maximize the gains from trade and generate labor market outcomes that support the employment aspects of the SDGs.

## 7.6 Conclusion

In the transition from the MDGs to the SDGs, the international community expanded the agenda and the targets for governments and development partners to achieve over the next 15 years. Employment issues, which were a late addition to the MDGs, receive full treatment with more relevant indicators in the new goals. SDG 8 dedicates considerable attention to employment, not only in calling for full employment, but also in improving labor market conditions in terms of reducing informality and gender disparities, eliminating forced and child labor, and improving labor rights. It is a challenging agenda, albeit one that offers very few quantified targets.

At the same time, there is little mention of trade in the SDGs. This may be because the benefits of freer trade, as part of the broader process of globalization, are highly controversial in the public mind, especially in regions hard hit by import competition. It may also be that trade is considered a means rather than an end or goal. In any event, economists and some policy makers have provided evidence that the gains from specialization are very real, even if unevenly distributed.

Labor is a particularly relevant aspect of the freer trade debate because the process of specialization, as a result of trade, causes sectors to adjust and reduces the demand for labor in some firms and sectors and increases it in others. The net employment benefit is sometimes difficult to calculate. Indeed, concerns about the possible negative employment impacts are behind a rising tide of protectionist sentiment in societies around the globe. New trade deals continue to be signed, but other proposed agreements may be in jeopardy. Further global trade liberalization during the 15-year period of the SDGs is far from certain.

In this chapter, we have reviewed part of the extensive literature on trade and employment. The purpose has been to see whether that literature, both theoretical and empirical, provides clues as to if and how increased trade can contribute to the achievement of the employment-related SDGs. What is clear is that the aggregate welfare gains from trade are as relevant today as they were when Ricardo first formalized his theory 2 centuries ago. Since then, the discussion has been about the distribution of those gains in terms of skilled and unskilled labor and between countries that are more labor- or more capital-abundant. Mainstream trade theory typically assumed full employment and immediate reallocation and, therefore, had less to tell about employment and unemployment than about wages. However, more recent theory has taken a closer look at the process of reallocation and built models that suggest that the speed of (re)matching workers and employers is related to the labor institutions that encourage job movement and the information channels available about vacancies.

The empirical evidence is vast and difficult to summarize. The effects on employment quantity are bedeviled by methodological issues, including how long to measure the effects from the start of a trade agreement; controlling for other factors that have an impact on employment; and offering one-sided (i.e., only one country) assessments of a bilateral or multilateral deal. Nonetheless, the cross-country evidence does suggest that greater trade openness is correlated with a lower rate of unemployment. Thus, trade can help to support the full employment target of the SDGs.

It is unclear from the evidence whether freer trade will increase, decrease, or have no effect on the level of informal employment.

Domestic labor and enterprise policy may be important in addressing this concern. There is evidence that greater openness is correlated with a lower incidence of child labor, but the country income level appears to be a more significant factor in reducing child labor. Research does not appear to have been carried out on whether trade impacts the level of forced labor, another area of concern in the SDGs.

Governments have several policy instruments at their disposal to generate positive employment benefits from trade. These include trade adjustment programs and efforts to anticipate skill demand and train school-leavers and workers for employment in emerging sectors. In addition, there has been a rapid increase in labor provisions in trade agreements in recent years. These are correlated with higher labor force participation and may help to maintain standards and avoid a race to the bottom.

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# 8

## Trade and Inequality

*Shujiro Urata and Dionisius A. Narjoko*

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### 8.1 Introduction

Increasing inequality has been a very serious concern for many people including policy makers and researchers in the world. Thomas Piketty's book, *Capital in the Twenty-First Century*,<sup>1</sup> which analyzes the growing asset inequality in developed countries, sold over 1.5 million copies (as of January 2015) throughout the world. One of the most contentious issues in the United States (US) Presidential election is the growing income gap between the rich and the poor. According to Saez (2015), the share of income held by the richest 1% of the population in total increased from 8.95% in 1978 to 21.24% in 2014 in the US.

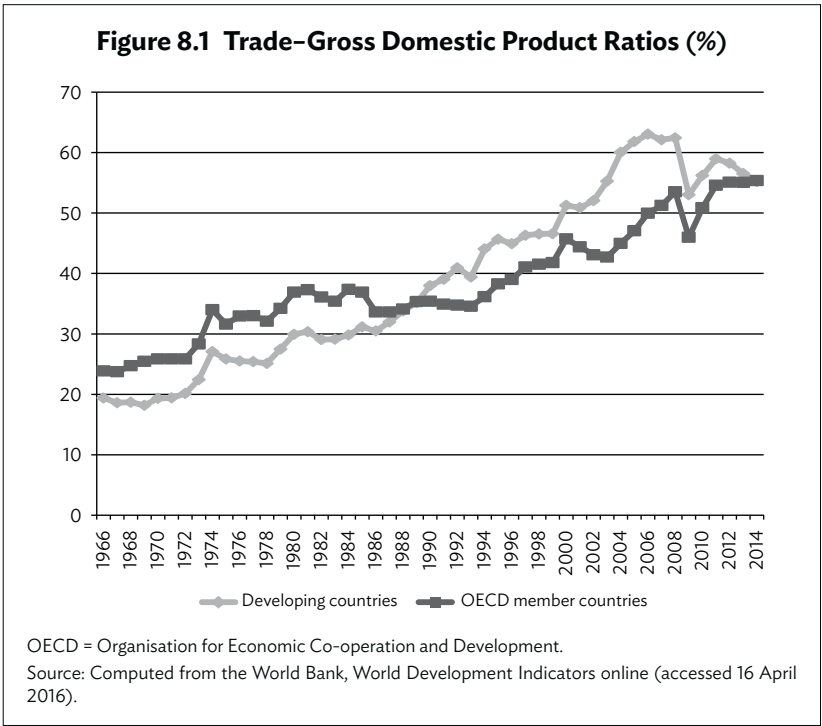
Increasing inequality has been a serious issue in the developing countries as well. The People's Republic of China (PRC) and India, two rapidly growing economies, have been reportedly experiencing increases in inequality. In terms of economic growth, the PRC and India have been regarded as successful cases, but in terms of quality of economic growth they appear to suffer from such problems as growing inequality and environmental problems. It is not only the PRC and India that are faced with growing inequality, but other developing countries as well.

Achieving equitable and balanced growth is important for the people, society, and government. Growing inequality would lead to social unrest and political instability, which in turn would undermine economic growth. Indeed, recognizing the importance of reversing the trend of increasing inequality in developing countries, the United Nations has included reducing inequality as one of 17 Sustainable Development Goals.<sup>2</sup>

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<sup>1</sup> The original French version was published in 2013. The English translated version was published in 2014 (Piketty 2014).

<sup>2</sup> See the following UN website for the Sustainable Development Goals. <http://www.un.org/sustainabledevelopment/sustainable-development-goals/> (accessed 20 February 2017).



While the world has been witnessing growing inequality in recent decades, it is also experiencing rapid economic globalization through international trade and investment, particularly in the form of foreign direct investment (FDI). The share of trade (exports + imports) in gross domestic product (GDP) (trade–GDP ratio) for developing and developed countries increased more or less continuously from the late 1960s through 2014 (Figure 8.1). Specifically, the trade–GDP ratios for developing and developed countries increased from 29.9% and 36.9% in 1980 to 51.3% and 45.7% in 2000, respectively, and then further to 55.2% and 55.3% in 2014. Major drivers of the increase in trade–GDP ratios include trade and FDI liberalization, and reduction in transportation costs by technological progress and deregulation in transportation services sectors.<sup>3</sup>

Growing inequality and rapid globalization have been observed in tandem; as such, globalization has often been accused of worsening

<sup>3</sup> See, for example, Hummels (2007) about the reduction in trade cost.

inequality. Indeed, anti-globalists, many of whom are concerned with growing inequality, have held a number of demonstrations against the meetings organized by the World Trade Organization, the World Bank, the International Monetary Fund, and other international organizations as well as developed countries such as G-7 Summits, which are considered to have promoted globalization.

Considering the discussions and observations above, the purpose of this chapter is to examine the impacts of globalization, particularly in terms of international trade, on inequalities in developing countries.<sup>4</sup> Inequality is found in many forms, including income inequality, wage inequality, asset inequality, regional inequality, gender inequality, generational inequality, and others. We analyze the impacts of international trade on inequalities from the following perspectives.<sup>5</sup> In section 8.2, we examine the impacts of international trade from the global perspective. Specifically, we first analyze inequalities between developing and developed countries, and then global inequalities, which are measured as if the world is treated as one country or one entity. In section 8.3, we turn to within-country income inequality, while in section 8.4 we analyze wage inequality, which is a major component of income inequality, in depth. In section 8.5, regional inequalities within countries are examined. The final section, section 8.6, concludes the chapter by summarizing the findings and providing several policy implications.

## 8.2 Inequality from the Global Perspective

Inequality from the global perspective can be examined in several ways. One may compare a country's average per capita income with that of another, and examine whether the gap has widened or narrowed over time. In this approach, the unit of comparison is a country or a group of countries such as developing and developed countries. Another approach is to consider all the people in the world as individuals or world citizens and measure inequality among them. The measured inequality may be considered as the global inequality. In this section, both approaches are used to learn more about inequality in the world. One may find global inequality decomposed into cross-country equality,

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<sup>4</sup> For developing countries, consumption rather than income is a better indicator of measuring inequality because many households are engaged in self-employment and self-consumption, which are not captured by the statistics on income. But most studies use income or wage statistics rather than consumption statistics because of the limited availability of consumption data.

<sup>5</sup> See Goldberg and Pavcnik (2007) and Goldberg (2015) for a survey of the literature.

which is investigated in section 8.2.1 and within-country inequality, which is examined in section 8.3.

## 8.2.1 Inequality between Developing and Developed Countries

Inequality between the rich (developed) countries and the poor (developing) countries has been a contentious issue for many decades. International trade has been considered to play an important role in influencing this inequality. Some observers argue that developed countries exploit developing countries via a trading system where developing countries export primary products such as natural resources to developed countries while importing industrial products. According to this view, since the terms of trade of primary products as compared to industrial products tend to worsen over time (Prebisch–Singer hypothesis),<sup>6</sup> trade widens inequality between the developed and developing countries.

However, there has been a totally opposing view, which argues that trade is an engine of economic growth,<sup>7</sup> able to reduce inequality if developing countries successfully expand it. Expansion of exports enables the developing countries to earn foreign exchange, with which they can import raw materials, intermediate goods, capital goods, technology, and other items. Export expansion also enables exporting firms to benefit from economies of scale and improve productivity.

As seen in the above discussions, the impacts of trade on economic growth can be positive and negative. Considering this, we review the empirical studies that examined trade and economic growth, with a focus on the relationship between developing and developed countries.

Dollar (2005) compared per capita GDP growth of the developing and developed countries from the 1960s through the 1990s for about 100 countries using data obtained from the Penn World Tables, and found that growth rates gradually declined in developed countries while accelerating in developing countries. During the 1960s, the growth of member countries of the Organisation for Economic Co-operation and Development (OECD) was about twice that of developing countries. During the 1970s and 1980s, the growth of developed countries declined significantly while that of developing countries remained more or less at around the same level. The 1990s saw a dramatic increase in developing

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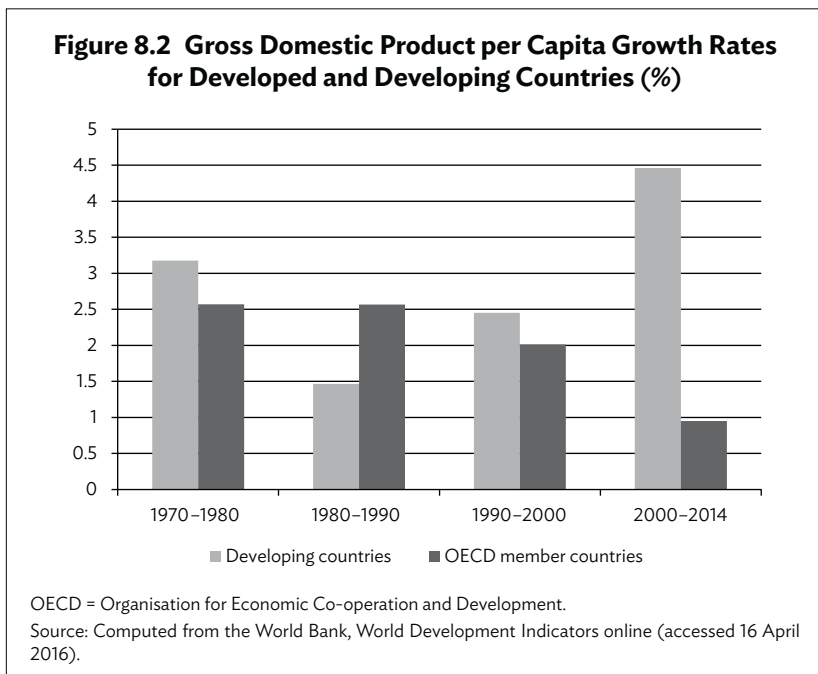
<sup>6</sup> On the Prebisch–Singer hypothesis and its validity, see, for example, Harvey et al. (2010).

<sup>7</sup> See, for example, the World Bank (1993).

countries' growth, while developed countries' growth continued to decline. Indeed, the growth rate of developing countries was twice that of developed countries in the 1990s.

A similar pattern of the reversal of GDP per capita growth rates between developed and developing countries in the 1990s can be seen in Figure 8.2. The data are taken from the World Bank's World Development Indicators. After a substantial decline from the 1970s to the 1980s, the developing countries' GDP per capita growth rate began to increase in the 1990s and then it increased remarkably in the 2000s. By contrast, the OECD countries' GDP per capita growth rate declined continuously from the 1980s to 2014. Indeed, there is a wide divergence in the average annual GDP per capita growth rates for the 2000–2014 period between the developing countries at 4.5% and OECD countries at 0.9%. These developments resulted in the narrowing of the GDP per capita gap between them. GDP per capita of developed countries was 24 times as high as that of developing countries in 1970, but the gap declined to 15 times in 2014.

A comparison of developing and developed countries' per capita GDP growth revealed that inequality between them declined in recent



decades, especially in the 2000s. Recognizing the increasing trend of the trade–GDP ratio during the period shown in the previous section, one may argue that trade contributed to the rise in per capita GDP growth rates, particularly for the developing countries, thus contributing to the narrowing gap. The validity of this assertion should be examined by conducting rigorous statistical analyses. Several empirical studies have been conducted to examine the impacts of foreign trade on economic growth during the last 2 decades, but no conclusive evidence has been presented yet. We review several important studies on this subject below.<sup>8</sup>

A typical growth regression has growth rate in terms of per capita GDP as the dependent variable and it has its initial level and a wide variety of control variables including trade and investment as explanatory variables. One of the early studies was the World Bank (1993). Using data covering 88 countries for 1960–1985, they conducted a regression analysis of the determinants of real per capita GDP growth and found that trade–GDP ratio had a significantly positive impact. Many studies found significant positive correlations between per capita GDP growth rate and trade–GDP ratio.<sup>9</sup> However, several econometric problems concerning growth regression, including the problems of endogeneity and correlated individual effects, were pointed out.<sup>10</sup>

Several studies dealt with these problems. Frankel and Romer (1999) investigated the impact of international trade on per capita income by

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<sup>8</sup> The issue of the impact of trade on economic growth has also been analyzed from the trade policy perspectives. For such studies, the main issue is whether trade liberalization promotes economic growth. There have been a large number of empirical studies on this issue. The results from growth regression analyses vary depending on the indicators of trade policy, types of regressions methods, periods of analysis, and others. In one of the most influential papers on this issue, Sachs and Warner (1995) found that trade liberalization promoted economic growth. Wacziarg and Welch (2008) extended the Sachs and Warner study by dealing with criticisms and showed positive impacts of trade liberalization on economic growth. For critical discussions of the previous studies based on growth regressions, see, for example, Rodríguez and Rodrik (2001) and Rodríguez (2007), which did not find a trade liberalization growth-promoting effect. Major criticisms include incorrect indicators of trade policy and inappropriate econometric treatment. Some opponents of growth regressions, which include Srinivasan and Bhagwati (1999), advocate country-level case studies. The result of country case studies such as Krueger (1978) in general support outward-oriented trade policy for achieving economic growth. It should be noted that the study of trade policy on economic growth and the study of trade openness (trade/GDP) on economic growth are closely related, but their meaning is different. One obvious reason for the difference is that trade liberalization, for example, reduction in tariff rates, does not necessarily increase the trade/GDP ratio because the tariff rate is only one factor among many, such as the exchange rate.

<sup>9</sup> See Winters (2004) for a survey.

<sup>10</sup> See Caselli et al. (1996) on these points.

dealing with the endogeneity problem in that countries whose incomes are high for reasons other than trade may trade more. Analyzing the data from 150 countries for 1985 by using the instrumental variable estimation method, Frankel and Romer found that trade has a positive impact on income, although the estimated coefficient was moderately statistically significant. Dollar and Kraay (2004) conducted a regression analysis by adopting instrumental variables estimation to deal with the endogeneity problem and by taking the differences of the variables to deal with the problem of correlated individual effects. In their analysis, the explanatory variables include lagged growth, changes in trade volumes, and changes in policy and non-policy variables affecting growth.<sup>11</sup> The results of the estimation analyzing the growth rates in the 1980s and the 1990s for roughly 100 countries found that the change in trade volume had a positive and significant impact on growth.

Despite several attempts to deal with the problems raised by the critics, these authors do not seem to be successful in dealing with those problems. Rodríguez (2007) reviewed some major studies including Dollar and Kraay (2004) and found that these studies did not deal with the problems successfully. Rodríguez asserted that one of the reasons why it is so hard to reach definitive conclusions regarding the trade-growth link is the complex web of interrelationships that is involved in the determination of a nation's income. Rodríguez pointed out geography and institutions, which would affect trade as well as economic growth. As such, these factors need to be considered in the regression analysis. Another issue raised by Rodríguez is the period of analysis. Using the more recent data covering the 1990–2003 period rather than the 1980s and 1990s as in the earlier studies, Rodríguez performed a first-difference regression analysis, similar to the approach adopted by Dollar and Kraay (2004). He also added more control variables such as those associated with institutions, and found trade/GDP ratio to be mostly positive, but statistically insignificant.

A brief survey of the previous studies on the impacts of trade on economic growth revealed that the strong positive impacts found in early studies turned out to be not robust. The results of the survey are not encouraging for the proponents of trade-promoting policies, and the impacts of trade and economic growth need to be analyzed further. Goff and Singh's 2013 study on the impacts of trade on poverty in Africa showed possible perspectives that need to be considered to discern the impacts of trade on growth. Analyzing the panel data covering 30 African countries over the period 1981–2010, they found that impacts

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<sup>11</sup> Specifically, institutional quality government consumption, monetary policy, and political stability.



of trade on poverty were negative, meaning that trade increases poverty, except in countries where finance sectors are deep, education levels are high, and governance is strong. These findings point to the need for accompanying policies/institutions to trade-promoting policies to achieve economic growth. With these policies, reallocation of resources from less productive sectors to more promising ones will be enhanced, resulting in economic growth.

Although earlier empirical studies analyzing macroeconomic variables have shown mixed results of the impacts of trade on economic growth, various reasons for possible positive impacts have been pointed out in discussions on this issue. One of the most important reasons is the productivity-enhancing effects of trade, i.e., exports and imports. This relationship was detected in earlier studies using macro as well as sectoral data, but the lack of appropriate theory and necessary data precluded researchers from establishing the causal relationships empirically.<sup>12</sup> It was the advent of the heterogeneous firm and trade model, developed by Melitz (2003), and the availability of firm-level data that enabled researchers to discern how expanding trade and/or trade liberalization affects the aggregate economy. Several studies have found that exporting resulted in an improvement in productivity of exporting firms, or the presence of the “learning by exporting” effect.<sup>13</sup> The sources of exporting firms’ productivity-enhancing effect may include economies of scale and acquisition of advanced technology in foreign markets, which may be obtained by exporting. Increased imports are found to contribute to increase local firms’ productivity. Amiti and Konings (2007) argued that trade liberalization in Indonesia raised local firms’ productivity by enabling them to use a greater variety of imported intermediate inputs. We will come back to this issue, when we discuss wage inequality.

## 8.2.2 Global Inequality

In this section, we examine the allied impact of globalization and how global inequality has changed in recent decades. According to Bourguignon and Morrisson (2002), global inequality rose from 1820 to 1980, as their estimates of the global Gini coefficient increased from 50 to 65 during that period. For the period after the 1980s, various estimates have been made with mixed results in terms of the direction of the

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<sup>12</sup> For example, see Alcalá and Ciccone (2004).

<sup>13</sup> The studies that detected “learning by exporting” effect include, for example, Aw et al. (2000), Girma et al. (2004), De Loecker (2007), and Hahn and Park (2010).

change. Bhalla (2002) estimated the global Gini coefficient and found that it declined from 67 in 1980 to 64 in 2000. Sala-i-Martin (2002) also found a decline. By contrast, Bourguignon and Morrisson found the Gini coefficient to remain at 65.7 in 1980 and 1992, while Milanovic (2002) found an increase of about 3 Gini points from 62.5 in 1988 to 65.9 in 1993, which is followed by a decline of 1 Gini point in the next 5 years and by an increase of 1 point by 2002.<sup>14</sup> Based on these calculations, Milanovic observed a fluctuating Gini coefficient from the 1980s to 2002. Bourguignon (2016) reported that global inequality declined after 2000. These observations show that global inequality worsened from the 19th century to around 1980, but it remained about the same level or improved from the 1980s through around 2010.

The impact of globalization on global inequality may be analyzed by decomposing global inequality into two components: inequality in mean incomes between poor and rich countries, and within-country income distributions. If globalization, in the form of, for example, an increase in the trade–GDP ratio reduces the mean income gap between poor and rich countries and it reduces within-national income distributions, then global inequality is likely to be reduced. A comparison between the rich and poor countries in terms of changes in per capita GDP (Figure 8.2) and the changes in trade–GDP ratios (Figure 8.1) shows that per capita GDP growth was accompanied by globalization. Coupled with the observation in the next section that the impacts of globalization on within-national income distribution are mixed, one is tempted to argue that globalization contributed to narrowing global inequality. However, this assertion cannot be supported if one remembers that in section 8.2.1 the earliest studies have shown that the impacts of globalization on economic growth are also mixed. These observations and discussions indicate that the impact of globalization on global inequality cannot be conclusively determined. More studies on these two issues need to be conducted to see if and how globalization affected global equality/inequality.

### 8.3 Within-Country Income Inequality

Many studies have found that within-country inequality increased in both developed and developing countries in recent decades.<sup>15</sup> Before we

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<sup>14</sup> This calculation is reported in Milanovic (2006).

<sup>15</sup> Jaumotte et al. (2013) provided the information from the 1980s to around 2003. See also Goldberg and Pavcnik (2007) for the cases of several developing countries.

examine whether globalization, particularly in terms of international trade, has contributed to this, we comment on the changes in trade-GDP ratios and Gini coefficient for selected developing countries in East Asia from the 1980s to 2012. It should be noted that the Gini coefficient is available for a limited number of countries for certain years, making cross-country, time-series comparisons difficult.

Figure 8.3 shows the trade-GDP ratios and Gini coefficients for nine countries in East Asia, for which both are readily available. Concerning the trend in the trade-GDP ratios, all the countries in the figure showed substantial and continuous increase through the end of the 1990s although many countries experienced a decline toward the end of the 1990s because of the Asian financial crisis. Entering the 21st century, two divergent trends appeared. One group of countries, including Cambodia, the PRC, India, the Lao People's Democratic Republic, Thailand, and Viet Nam continued to increase the trade-GDP ratios, while the other group consisting of Indonesia, Malaysia, and the Philippines experienced a reversal in the trend and recorded a decline in the trade-GDP ratios.

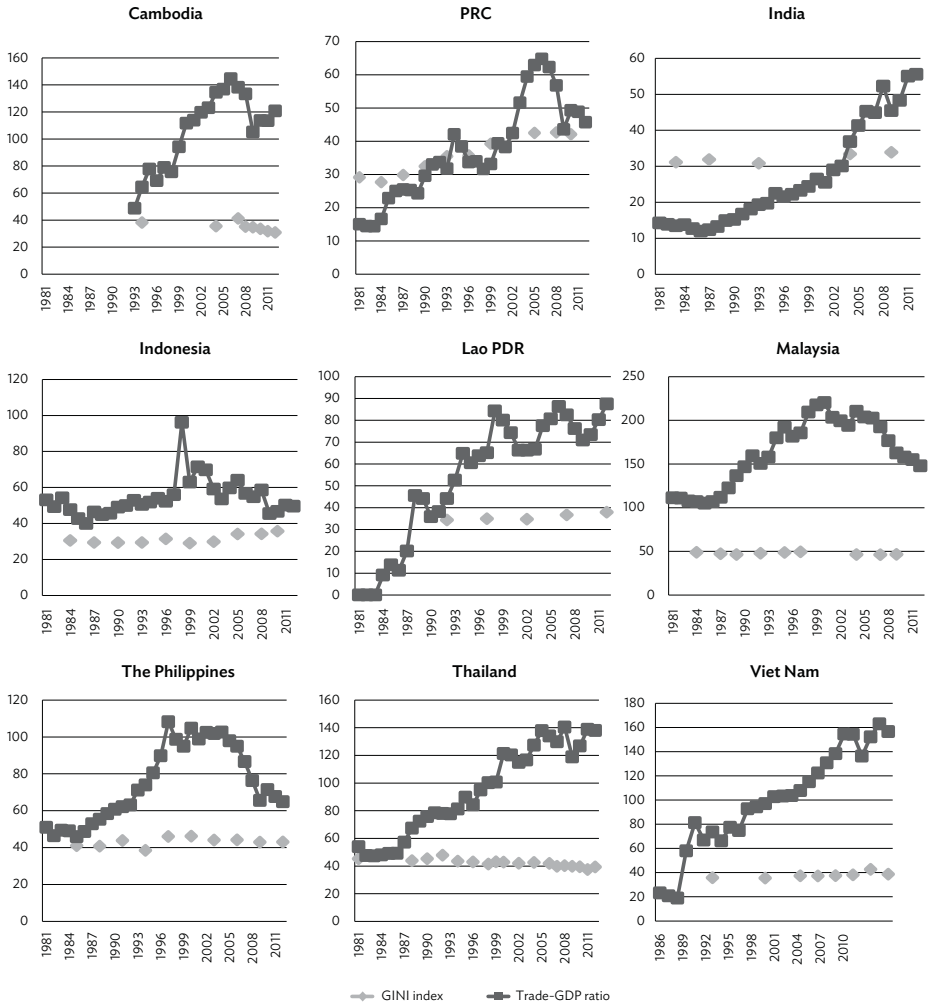
Turning to the Gini coefficient, we find that the PRC is the only country that exhibited a continual and substantial increase from the early 1980s to 2010, as the index increased sharply from 27.69 in 1984 to 42.06 in 2010. India, Indonesia, and Viet Nam showed an upward trend in the 21st century after experiencing a relatively stable trend. By contrast, Cambodia, Malaysia, the Philippines, and Thailand showed a downward trend in the 21st century after experiencing a slight upward trend. These casual observations appear to find a strong positive correlation between trade-GDP ratio and inequality only in the case of the PRC. For other countries, such relationships cannot be found for the entire period of examination, although they can be detected for certain subperiods.

Many studies have addressed the issue related to the impact of globalization on within-country income inequality for various countries. Most of these studies examined the impact on wage inequality rather than income inequality.<sup>16</sup> Wage inequality is closely related to income equality, because wages are a dominant part of income for many workers. However, they are different because many people receive unearned income, such as profits from investments. There are relatively few studies that examine the relationship between globalization and within-country income inequality as a whole for individual countries. Several cross-country econometric studies have been conducted, as will be discussed below.

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<sup>16</sup> See section 8.4 for the discussions on globalization and wage inequality.

**Figure 8.3 Trade–Gross Domestic Product Ratios and Gini Index for Selected East Asian Countries**



GDP = gross domestic product, Lao PDR = Lao People's Democratic Republic, PRC = People's Republic of China.

Source: Computed from the World Bank, World Development Indicators online (accessed 16 April 2016).

One useful theoretical framework that may be applied to explain the relationship between trade and income distribution is the Stolper–Samuelson theorem derived from the Heckscher–Ohlin trade model. According to the Stolper–Samuelson theorem, trade liberalization

leads to an increase in the price of abundant factors because it expands the production and exports of associated products and reduces the production of scarce factor-intensive products as a result of an increase in imports of the latter. Let us assume that there are two types of labor—skilled and unskilled—and developing countries are abundantly endowed with unskilled labor. Under such a circumstance, developing countries' trade liberalization will expand exports of unskilled labor-intensive products and imports of skilled labor-intensive products, which in turn increases demand for unskilled labor and reduces demand for skilled labor. Assuming that labor's income comes from wages, one could show that an expansion of foreign trade would improve income distribution in developing countries as it would increase the wages of unskilled workers while it would reduce those of skilled workers.<sup>17</sup>

We review the existing country-level and cross-country studies on the impacts of globalization on within-country income inequality. Country-level studies analyze the trends of various variables, including income distribution, globalization, employment, development policies, and others, while cross-country studies use statistical methods. Let us begin with country-level studies and then turn to cross-country studies.

Goldberg and Pavcnik (2007) analyzed the impacts of globalization on within-country inequality in developing countries covering the period from the 1980s to around 2000. For the economies they analyzed, that is, Argentina; Brazil; Chile; Colombia; Hong Kong, China; India; and Mexico, the share of trade to GDP increased and income inequality measured by Gini coefficient was either stable or increased during the 1980s and 1990s. These developments are not consistent with the Stolper–Samuelson prediction discussed above. Noting the difficulty in establishing a causal link between expanded trade and growing inequality, partly because of the difficulty in considering other factors such as the changes in macroeconomic environment, and adoption of various policy reforms other than trade policy, Goldberg and Pavcnik concluded that evidence has provided little support for the conventional wisdom (Stolper–Samuelson theorem) that trade openness in developing countries would favor the less fortunate (at least in relative terms).<sup>18</sup> According to Goldberg and Pavcnik, one of the decisive factors is constrained labor mobility, which limited sectoral reallocation. They also argued that the mechanisms through which trade affects income distribution are country-, time-, and case-specific, implying the need for case studies.

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<sup>17</sup> Detailed discussions on wage inequality will be presented in section 8.4.

<sup>18</sup> Goldberg and Pavcnik (2007: 77).

Mah (2013) analyzed the impact of globalization on income inequality in the PRC. Globalization is captured by the trade–GDP ratio and FDI inflows–GDP ratio, while income inequality is measured by two ratios: one is the average income of the top 10% divided by that of the bottom 10%, and the other is the average income of the top 10% divided by that of the bottom 40%. Applying the dynamic ordinary least squares method to the time-series data covering 1985–2007, Mah found that increases in the trade–GDP ratio had a strong positive effect on income inequality, regardless of the measure, while the effect of FDI inflows was found to be mixed. These findings appear consistent with the casual observation made earlier, showing the rising trend of trade–GDP ratio and increasing inequality in the PRC.

Pal and Ghosh (2007) analyzed the trend of income and consumption inequality from the 1980s to early 2000s in India. Noting the mixed evidence on the direction of change in income inequality during the 1990s, the period of economic reform, which was obtained from various studies, they presented other researchers' studies that showed an increasing inequality in terms of expenditure and consumption. Pal and Ghosh argued without conducting a statistical analysis that fiscal policy, financial reform, liberalization of foreign and domestic investment, and trade liberalization all contributed to increasing inequality, as they favored the allocation of fiscal as well as financial resources from the poor to the rich. On the impact of trade liberalization, they argued that it had negative impacts on agriculture, which employs low-income workers, while it only benefited a small portion of the manufacturing sector, resulting in growing inequality.

All the studies surveyed above did not support the Stolper–Samuelson prediction. The findings of Ragayah (2008) on the case of Malaysia are different. Ragayah (2008) found that Malaysia's income inequality declined during the 1976–1990 period, but it increased after 1990. Ragayah argued that differences in the pattern of exports between these two periods played an important role in its impacts on income inequality. Rapid growth during the 1976–1990s was largely attributable to rapid expansion of labor-intensive exports, which provided employment for many, thereby contributing to the decline in income inequality. The situation changed as a labor shortage emerged in the 1990s. To maintain its global competitiveness, Malaysia upgraded its industrialization from one that is labor-intensive to one that is capital- and technology-intensive. Consequently, this new development strategy altered industries' labor demand pattern toward skilled and highly educated workers, resulting in increasing income inequality. The massive entry of unskilled foreign labor into the Malaysian economy enhanced this trend by dampening their wages. Ragayah's findings are

very interesting and consistent with the Stolper–Samuelson theorem in that globalization reduced income inequality when Malaysia was a low-income developing country, while worsening it when Malaysia became a middle-income country.

Let us turn to the cross-country analysis. Anderson (2005) provided a review of cross-country econometric studies of the effect of openness on within-country inequality.<sup>19</sup> The studies that Anderson reviewed covered the period up to the mid-1990s. Specifically, he examined the results of the studies that statistically tested the validity of the following three hypotheses: (1) greater openness raises overall inequality in all countries; (2) greater openness reduces overall inequality in developing countries, but increases overall inequality in developed countries; (3) the effects of greater openness on overall inequality vary, depending on country factor endowments. Reviewing the studies, Anderson came up with the following broad conclusions on the three hypotheses: there is almost no support for the first hypothesis, while there is conflicting evidence regarding the second hypothesis. Some studies found that greater openness does reduce inequality in developing countries, but others found no significant effect of openness on inequality at any level of economic development. There is qualified support for the third hypothesis. Specifically, some studies found that the effect of openness on inequality increases as countries' human capital endowments increase. This finding appears to indicate that openness increases inequality as the level of economic development rises and it is consistent with Ragayah's finding on Malaysia. One of the problems of many of these studies is the omission of possibly important variables such as technology and FDI, which are likely to impact income inequality. Jaumotte et al. (2013) took on this problem by explicitly introducing technology, FDI, and several other variables in their econometric analysis.

Jaumotte et al. (2013) conducted a detailed statistical analysis of the impacts of globalization on within-country income inequality. Their data set included 51 countries (20 developed and 31 developing) over 1981–2003, and they observed that income inequality rose in most countries during that period. They found that the income of the poorest groups increased, suggesting that inequality increased in the upper parts of the distribution in most countries. Their empirical analysis revealed that trade liberalization (increase in trade–GDP ratio as well as a decline in tariff rates) is associated with lower income inequality, while increased financial openness is associated with higher income

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<sup>19</sup> The measure of inequality differs among the studies, but the Gini index and the share of the poorest quintile in national income are used in many studies.

inequality. The combined contribution of increasing trade and financial flows to rising inequality is slightly positive in the case of all countries and slightly negative for developing countries. It is noteworthy that exports, particularly agricultural exports, contribute to reducing inequality. Tariff reductions are found to reduce inequality. Jaumotte et al. argued that tariff reductions affected goods that are disproportionately consumed by the poor. Among different types of international financial flows, inward FDI is revealed to increase inequality. According to Jaumotte et al., this finding may reflect the phenomenon that FDI mostly takes place in relatively higher skill- and technology-intensive sectors, thereby increasing the demand for, and wages of, more skilled workers.

In contrast to the inequality-reducing impacts of trade, Jaumotte et al. found that technological progress increased inequality. This finding is consistent with an observation that technological progress increases the demand for skilled workers. We will analyze this issue more in detail in the next section on wage inequality. Based on a decomposition analysis of the change in inequality based on their estimation results, Jaumotte et al. found that the contribution of technological progress was positive (increasing inequality) and very large, while the contribution of globalization (trade and financial flows) was negative and very small in the case of developing countries.<sup>20</sup>

In this section, we examined the impacts of globalization, particularly in the form of increasing international trade, on within-country income inequality. We first observed somewhat different recent changing patterns of trade-GDP ratios and within-country income inequality for some countries from the patterns observed for the period up to the early 2000s. Some countries saw a decline in trade-GDP ratios, while some countries registered a decline in within-country income inequality. These findings indicate the need for more empirical studies on this subject using more recent data.

A survey of empirical studies revealed somewhat different patterns between the country-level studies and cross-country studies. Some country-level studies showed that an increase in trade-GDP ratios worsened inequality, while some country-level studies did not detect significant impacts of trade on income distribution. Cross-country studies found that trade improved income distribution, although the impacts are rather small. These mixed results of the impacts of trade on income inequality indicate the need for more analyses.

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<sup>20</sup> For developed countries, contributions of globalization and technological progress were found to be positive. The magnitude of the contribution of technological progress is more than twice as large as that of globalization (Jaumotte et al. 2013).



## 8.4 Wage Inequality

The question about globalization and wage gaps came after an observation of two different, but not necessarily mutually exclusive facts, that is, an increase in skilled intensity in many countries during the 1980s and 1990s and implementation of trade reforms in these countries during these periods. The two coincidentally happened at the same time. Studies on Latin American countries found that skill premium in Mexico (Cragg and Epelbeum 1996), Colombia (Attanasio et al. 2004), Argentina (Gasparini 2004), and Brazil (Gasparini 2003) all increased by at least 10% for a 5- or 10-year period within the 1980s and 1990s. The increase in Mexico is the largest among all and it suggests the strongest potential link between globalization and wage inequality; the country implemented major trade reforms in the 1980s and continued by implementing further reforms to increase FDI and facilitate cross-border outsourcing (Cragg and Epelbeum 1996).

In this section, we review theoretical explanations of the possible role of globalization in affecting the wage gap in developing countries and then present recent empirical findings on this relationship in developing countries.

### 8.4.1 Increasing Wage Gap in Developing Countries: Theoretical Explanations

Goldberg and Pavcnik (2007) pointed out that the shift in demand for skilled workers is the main reason for a widening wage gap, or skill premium, observed in developing countries. While the demand-shift mechanism is clear, it is not so clear how the demand curve shifts. There are then questions about which factors cause demand to shift and how this occurs.

The neoclassical Heckscher–Ohlin model is not always able to explain the skill premium trend and pattern, especially those in developing countries. The Stolper–Samuelson theorem derived from the Heckscher–Ohlin model predicts that distributional changes in developing countries, which usually are endowed with unskilled workers, should favor unskilled workers more than the skilled ones in the event of trade liberalization. This theorem therefore predicts a lower gap in wage between skilled and unskilled workers.

The Stolper–Samuelson theorem, however, contradicts the fact of an increasing wage gap over time. There are at least three potential explanations for this according to Goldberg and Pavcnik (2007). First, one may extend the basic Heckscher–Ohlin model, which is built upon

a two-sector and two-factor framework, to include the third factor (e.g., natural resources) or an additional sector (non-traded goods) that requires skilled workers for production. Further, it is assumed that natural resources complement skilled workers. If, suppose, a country has abundant natural resources, the extended Heckscher–Ohlin model predicts that trade creation in favor of an expansion in the natural resources sector increases the demand for skilled workers, which is translated to an increase in wage of skilled workers. The demand (and hence the wage) of unskilled workers meanwhile declines.

Second is the case where large tariff reduction is applied to unskilled labor-intensive sectors. In developing countries, these sectors producing typically are highly protected for various reasons (mainly for political economy, i.e., as a major source of employment). Cuts in tariffs reduce the demand for unskilled workers and thus reduce the wage of the workers. Kumar and Mishra (2008) provided some evidence from major trade liberalization in India in the early 1990s, in which tariff reductions were disproportionately large in labor-intensive sectors. An increase in the wage gap was observed in these sectors.

Third, there is a shift in the distribution of comparative advantage across countries, with the emergence of the PRC or other developing countries that have comparative advantage in unskilled labor-intensive sectors. This pushes more advanced, or middle-income, countries, such as those in Latin America in the 1980s, to move their pattern of comparative advantage toward goods with higher skill intensity.

Other alternative explanations not in the context of the Heckscher–Ohlin model have been put forward in the literature. The first is the outsourcing or product-sharing theory of Feenstra and Hanson (1996, 1997). The model they developed shows that FDI increases demand for skilled labor and thus increases skill premium. This model emphasizes the growing importance of trade in intermediate inputs, partly because of FDI. In the model, relative demand for skilled labor is increased because production of relatively skill-intensive intermediate inputs is shifted to these countries. While the shift can be characterized as less skill-intensive from the perspective of a developed country, it is skill-intensive from the perspective of a developing country.

It is useful to make some comments on the difference between traditional trade theory and the one suggested by Feenstra and Hanson. The main difference comes from different expectations of how globalization changes production of skill-intensive intermediate inputs. The former expects a decline in production because many intermediate inputs are replaced by imported ones. Feenstra and Hanson's theory, meanwhile, predicts that domestic production is increased because now many of the inputs are produced locally by outsourced firms.

The magnitude and direction of globalization's impact on wage premiums thus depends on the changes in production of skill-intensive intermediate inputs.

The second explanation is often termed skill-biased technological change (SBTC). SBTC argues that the technology used in many developing countries has become more advanced over time, inducing an increase in the demand for skilled workers. The process that brings in advanced technology to these countries, however, is not random. It depends on openness, that is, technology transfer from overseas or more developed countries is facilitated by a more open trade and/or a more liberal investment regime. Technology, therefore, is endogenous to openness, and this is how globalization is responsible for the skilled-bias technological change (Goldberg and Pavcnik 2007).

Two mechanisms reflecting endogeneity are provided by Wood (1999) and Acemoglu (2003). The first is "defensive innovation," as Wood termed the response. He hypothesized that intensified competition from imports may induce firms to engage in research and development (R&D) activities that they have little incentive to undertake before trade liberalization (Goldberg and Pavcnik 2007). The second mechanism, suggested by Acemoglu (2003), comes from imports of machinery or other capital goods that are complementary to skilled workers. In this model, trade liberalization reduces the price of the machinery and capital goods and therefore increases the imports of these goods. This results in an increase in the hiring of skilled workers for the operation of the more advanced technology installed by imported inputs.

#### **8.4.2 Increasing Wage Gap: Findings of Empirical Studies on Developing Countries**

A recent study by Amiti and Cameron (2012) provides some support for the Stolper-Samuelson theorem in explaining skill premium in developing countries, by examining the effects of tariff reduction on wage skill premium in Indonesian manufacturing. Amiti and Cameron examined the effects of output and input tariffs separately, and they found that a cut in input tariffs reduced skill premiums among firms that imported intermediate inputs. Relative demand for skilled labor was lowered because imports replaced domestic production of relatively skill-intensive intermediate inputs.

Aldaba (2013) also found a declining wage gap in the Philippines' manufacturing sector as an impact of trade liberalization introduced by the Association of Southeast Asian Nations Free Trade Agreement. The finding is robust when the impact was tested using effective and nominal rates of protection. Aldaba suggested that, given more intense

foreign competition after trade liberalization, import-substituting firms may have decided to concentrate on the low value-added stage of the production process that requires relatively less-skilled workers.

However, the results of Amiti and Cameron, which are consistent with the prediction of trade theory, contrast with the findings from other studies. There is evidence from these studies that globalization increases skill premiums, not only in developed countries, but also in developing countries.

Several studies support the SBTC hypothesis. Galiani and Sanguinetti (2003), for example, observed a positive relationship between import penetration ratios, which increased from 5.7% in the early 1990s to 19% in 1999, and hourly earnings of college graduates in Argentina. An increase in the demand of skilled workers is suggested to have come from an increase in imported goods.

In terms of support for outsourcing theory, Kohpaiboon and Jongwanich (2013), using plant-level data from Thai manufacturing, examined the effects of both the engagement with global production networks and the reductions in tariffs on wage skill premiums within firms. They particularly focused on the effects of engagement with global production networks, arguing the growing concern in developing countries' policy makers that participating in global production sharing could trap their enterprises in using low-skilled or low-quality workers and outmoded technology. The study found that the engagement with global production networks increases wage skill premiums in skill-intensive firms, contrary to the concern of policy makers. Their finding suggests that the firms in production networks restructure using more advanced technology.

Thangavelu (2013) came up with findings along the same lines. Using enterprise-level data of Viet Nam's manufacturing, he found that firms adopting new technologies and restructuring their organization, as a response to a liberalized trade and investment regime, were likely to experience a wage gap increase between skilled and unskilled workers.

One may argue that the widening wage gap is partly due to an increase in exports, because of a more open trade regime globally. Global and regional production networks have been constructed actively by multinational corporations in East Asia. Under the production networks the magnitude of trade, both exports and imports, expanded significantly, contributing to the increased wage gap. Kohpaiboon and Jongwanich, as well as Thangavelu and Aldaba support this argument. All of them found that a widening wage gap was evident in more skilled sectors, which are also export-oriented sectors at the same time. This is consistent with Bernard and Jensen's 1997 study that observed an

increase in exporting plant employment, which in turn is found to have contributed to an increase in demand for skilled labor.

Several studies confirm the hypothesis of endogenous technology in the SBTC theory. Attanasio, Goldberg, Pavcnik (2004) showed for Colombia that the increase in skill intensity over time after trade liberalization was observed in all industries and the liberalization was found to affect the so-called “industry premium” in wage determination (the premium is associated with anything but workers or industry characteristics). Their finding is consistent with the prediction of SBTC. In addition, Attanasio, Goldberg, Pavcnik (2004) documented that the increase in demand for skilled labor in Colombia was largest in the sectors that experienced the largest tariff cuts.

The point about endogenous technology through R&D mechanisms was made by Hahn and Choi (2013) in the case of manufacturing in the Republic of Korea. They examined the effects of output and input tariff reductions on within-plant wage skill premiums in manufacturing plants in the Republic of Korea, and they found that output tariff reduction interacts differently with plants’ R&D and investment behaviors in affecting skill premiums. Specifically, output tariff reduction increases wage premiums in R&D-performing plants while it reduces wage premiums in plants making facility investments. One story behind the results is that, although both R&D and facility investments may respond to changes in profit opportunities due to output tariff reductions, R&D raises relative demand for skilled workers while facility investment, an activity of increasing production capacity, raises the demand for unskilled workers.

Meanwhile, for the case of the PRC, Anwar and Sun (2012) supported the competition channel that induces investment in technology through Wood’s 1999 defensive innovation mechanism. Anwar and Sun showed that the extent of the wage gap increased by about 50% over only 6 years, from 2000 to 2006, and they explained much of it as the impact of competition forces from imports that pushed firms to hire more skilled workers. This seems to have been facilitated by an increase in the proportion of private firms; in their study, private ownership variable was found to have been positively related with the wage gap.

The defensive innovation competition channel is also found in the case of Indonesian manufacturing. Using data of medium-sized and large establishments, Takii and Narjoko (2013) examined how greater exposure to international trade and FDI affects the extent of skill premiums in wage and employment intensity. They found that tariff cuts have led local plants with low imported input shares, as well as non-importing plants, to hire more skilled workers. This was likely a result

of the plants' efficiency measures taken in response to more competitive pressure from foreign competition.

To sum up, evidence seems to point to rising within-country inequality that results from rising wage gaps comes from the creation, or existence, of more sophisticated goods produced domestically. Technology transfer is behind this phenomenon, working in various ways proposed by all nontraditional trade theories (i.e., subcontracting/product-sharing theory and SBTC). Here, unlike traditional trade theory, and because of production networks across countries, trade liberalization allows importation of advanced machineries that eventually increase skilled worker demand. This is the key difference; if traditional theory is adopted, importation only replaces goods initially produced domestically; there is only a weak element of technology transfer in the importation. Evidence also seems to indicate that in countries where production networks are not strong, such as in Indonesia and the Philippines, trade liberalization tends to behave more in line with predictions of traditional theory; in these countries, for example, trade liberalization seems to purely substitute products, or intermediate input, initially produced domestically.

## 8.5 Regional Inequality

Widening regional income inequality has been reported in many countries. Some of the most frequently reported cases include the PRC and India. The problem of regional inequality is a big concern for many, mainly because of its social and political impacts. Growing regional inequality would result in imbalances in the level of economic development between and among the regions, which, in turn, would increase social and political tensions, possibly resulting in deterring overall economic growth. Globalization is often accused of worsening regional inequality, mainly because the timing of rapid globalization coincides with growing regional inequality in several countries, including the PRC and India. However, coincidence does not mean causality. In other words, we cannot be sure if globalization has deteriorated regional inequality, unless we undertake rigorous empirical analysis.

Let us briefly review what economic theory tells us about globalization and regional inequality. According to spatial economics, the location of economic activities is mainly determined by the benefits and costs of agglomeration and transportation costs. Think of a firm deciding the location of its operation. It would choose to locate in an urban area where many firms are if it thinks the benefits of agglomeration in terms of ease of access (including transportation cost) to sales and

procurement networks, as well as to various kinds of information, such as on technology and market, outweigh the costs, such as traffic congestion and the high cost of land. If the reverse is the case, then it would locate in a rural area.

Recognizing these forces, the question then is whether globalization tends toward or against agglomeration. This depends on various factors, including the kinds of activities promoted by globalization and the location of ports and airports (infrastructure), which become gateways for connecting domestic economic activities to global economic activities. If globalization leads to an increase in agricultural production, which does not generally gain benefits from agglomeration, then economic activities will spread to rural areas, thus contributing to reductions in regional inequality. On the other hand, if globalization leads to an increase in manufacturing, which gains benefits from agglomeration, then economic activities are likely to be clustered in urban areas, contributing to regional inequality. These discussions indicate that one cannot know if globalization increases or reduces regional inequality a priori. The outcome depends on various factors, some of which are given above. In this section, we discuss the studies on Brazil, the PRC, India, Indonesia, and Mexico.

Zhang and Zhang (2003) observed an increase in regional inequality in the PRC from 1986 to 1998, as the provincial Gini coefficient increased from 19 to 26, reflecting booming coastal regions in contrast to sluggish inland regions. Using the provincial data covering 1986–1998, Zhang and Zhang estimated a model that quantitatively decomposes the effects of the variables listed below on regional inequality. Their findings show the contribution of these variables as follows: domestic capital (75.1%), foreign capital (8.1%), education (−8.0%), foreign trade (11.1%), inland/coast (3.8%), and other factors (9.9%). Based on these findings, Zhang and Zhang concluded that globalization through foreign trade and FDI played an important role in worsening regional inequality in the PRC. They argued that this finding contrasts with the standard trade model that implicitly assumes integrated factor markets, and their finding can be explained by the PRC factor markets having been rather segmented. Because of this segmentation, most gains from globalization have gone to the coastal parts of the country, leading to widening regional disparity.

Pal and Ghosh (2007) examined regional (interstate) inequality in India from the 1980s through the early 2000s, in addition to vertical inequality discussed in section 8.3. They found that regional inequality worsened during the 1990s. Specifically, the ratio of the per capita net state domestic product of the richest state, Punjab, to that of the poorest state, Bihar, increased from around 3 in the late 1980s to 4.7 in the early 2000s. The interstate Gini coefficient increased from around 16 in the

late 1980s to around 23 in the late 1990s. Although Pal and Ghosh did not discuss explicitly the causes of increasing regional inequality, they seemed to argue that the same factors that contributed to increasing vertical inequality also contributed to increasing regional inequality. In other words, trade liberalization was argued to be one of the factors that led to increasing regional inequality.

Daumal (2013) also found a substantial increase in regional inequality in India from the 1980s to the early 2000s. Specifically, the regional Gini coefficient increased from 16.0 in 1980 to 17.7 in 1990, and to 25.6 in 2003. The trade (exports + imports)/GDP ratio increased from 15% in 1980 to 40% in 2003. Applying the error correction model to the time-series data, Daumal found that trade openness contributed positively to the increase in regional inequality. This finding matches the assertion made by Pal and Ghosh. Daumal argued that during the 1980–2003 period, India's exports shifted from agricultural to manufacturing products, resulting in higher growth of the richer manufacturing region relative to the poorer agricultural region. Daumal also pointed out that opening the country in the 1990s led to high economic growth in the coastal region, as this instigated an agglomeration effect.

Daumal (2013) also analyzed the case of Brazil, where the trade–GDP ratio increased from approximately 17% in the late 1980s to about 30% in the early 2000s. Unlike India, Brazil did not experience an increase in regional inequality. Indeed, regional inequality declined as the regional Gini coefficient declined from 27.3 in 1985 to 23.8 in 2003. Daumal's time-series analysis showed that trade openness had a statistically significant negative impact on regional inequality. She attributed her finding to a large part of Brazilian exports consisting of agricultural products, which are grown in relatively poor regions. Furthermore, she observed that trade liberalization in Brazil led to relocation of some industrial activities to peripheral regions.

Resosudarmo and Vidyattama (2006) analyzed the regional income disparity in Indonesia. Using data covering the 1993–2002 period, they observed that regional income disparity is quite severe compared with other developing countries, including the PRC and India. However, they found a conditional convergence in regional income per capita growth from their statistical analysis. They also found that trade openness contributed positively to regional income per capita growth, resulting in reducing regional inequality. Resosudarmo and Vidyattama did not explain their finding.

Aroca et al. (2005) examined the changes in regional inequality over the period marked by trade liberalization (the accession to the General Agreement on Tariffs and Trade in 1986 and the establishment of the North American Free Trade Agreement [NAFTA] in 1994) in Mexico.



The authors observed a tremendous increase in disparity, which was realized in the form of creating several income clusters, thereby creating a “south” (low-income region) and a “north” (high-income region) in Mexico. What is notable is that these income clusters do not map to geographic regions, except the north region, which is directly on the US border. They found that the substantial divergence occurring in the 1985–2003 period is not related to the consolidation of a faster-growing northern block, but that only the south shows covarying growth rates. They argued that two likely explanations for the divergence occurring after trade liberalization are the sustained underperformance of the southern states, beginning before NAFTA, which affected local agricultural industries, and, to a lesser extent, the superior performance of an emerging convergence club in the north-center of the country.

An examination of the studies on the impact of international trade on regional inequality revealed that the impacts are mixed in that in some cases (Brazil and Indonesia) expansion in trade contributed to a reduction in regional inequality, while in other cases (the PRC, Indonesia, and Mexico) trade expansion increased regional income inequality. The different impacts are largely attributable to the composition of trade and the location of industry. If exports of agricultural products, which are grown in the poorer regions, increase, then regional inequality will slacken. On the other hand, if exports of manufactured products, which are produced in the relatively rich urban regions, increase, then regional inequality will increase. It was also found that limited labor mobility has a negative impact on regional inequality.

## 8.6 Concluding Remarks

We analyzed the impacts of globalization, particularly in the form of international trade, on inequalities from various perspectives. In terms of theory, increased trade is shown to have both positive and negative impacts on inequalities. In terms of global inequalities, increased trade can widen or reduce the gap between developing and developed countries, while increased trade can improve or worsen within-country income inequalities, wage inequalities, and regional disparities.

Our review of the empirical studies found that an increase in developing countries’ trade openness appears to have contributed to narrowing the development gap vis-à-vis developed countries, while its impacts on income gaps between developing countries are not clear. The impacts of increased trade or trade liberalization on within-country inequalities are found to be mixed. In some cases, trade liberalization improved wage inequality, while in other cases, the opposite pattern was

observed. Similar mixed patterns are found for regional inequalities. These mixed findings are consistent with the theoretical predictions also being mixed. One of the problems in empirically discerning the impacts of trade openness on inequalities is the difficulty of isolating the impacts of trade on inequality when many other factors, including labor market conditions, inflow of capital, and policy reforms are at work. Furthermore, as Goldberg and Pavcnik (2007) argued, the mechanisms through which globalization affected inequality are country-, time-, and case-specific, implying the difficulty in obtaining a general pattern. It is warranted then to conduct more empirical studies on the subject, particularly by using micro-data on trade, production, and employment at firm and household levels, which have become available for an increasing number of countries in recent years.

Having discussed trade's ambiguous impacts, we have realized that it is one of many factors that affect inequality. This is particularly the case for countries where trade accounts for a small part of their economic activities. Two important factors that affect inequality include discriminatory educational systems and labor market imperfection. Educational systems that discriminate against the poor and labor market regulations that limit the mobility of labor would result in widening wage/income inequality.

Recognizing the importance of ameliorating inequalities in order to achieve a stable social and political environment, an important precursor to sustainable economic growth, the government needs to implement policies to deal with the problems noted above. Specifically, the government should improve the quality of labor by providing education and training. Given developing countries' increasing demand for skilled labor, augmenting its supply would reduce income inequality, at least compared with the case where the skilled labor quantity remains constant. One needs to stress the importance of a well-functioning and flexible labor market, where workers with improved skills can find and obtain appropriate jobs.<sup>21</sup>

It is important to note that the government should redistribute income to achieve balanced growth. Specifically, the government should provide social safety nets for workers that are negatively impacted by trade liberalization and/or increased imports. Social safety nets, including income compensation, education, and training, would not only reduce the negative impacts on the workers, but also limit worsening inequalities. Safety nets should be provided temporarily not permanently, because its task is to reduce the adjustment cost. Finally,

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<sup>21</sup> On these points, see Bolaky and Freund (2008), and Chang et al. (2009).

progressive income tax systems and inheritance tax systems should be adopted to redistribute income from the rich to the poor. Having discussed the need to introduce redistributive tax systems and realizing that excessively high tax rates would deter economic growth, the government should apply appropriate tax rates that balance equity and economic growth.

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\* The Asian Development Bank refers to “China” as the People’s Republic of China and to “Vietnam” as Viet Nam.

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PART II

# **Sustainable Growth**

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# 9

## Trade and Environment

Dale Andrew

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### 9.1 Introduction

This chapter examines how trade can promote Sustainable Development Goal (SDG) 15—“Life on Land”—and what the limitations of trade are as a means of implementing it. Of the 17 SDGs, SDG 15 concerns the terrestrial environment and land-based renewable natural resources. Nine targets (15.1–15.9), followed by three means of implementation (15.a–15.c),<sup>1</sup> are subsumed under the goal. Despite the deceptively short title “Life on Land,” the nine targets plus the three means of implementation cover a vast array of environmental issues: *ecosystems* (wetlands, drylands, mountains); *natural resources* (forests, genetic resources); *environmentally sensitive issues* (land degradation, invasive species, wildlife trafficking); and solutions thereto (reforestation, biodiversity accounting, pursuit by local communities of sustainable livelihood opportunities). As the objective of this chapter is to understand the potential, and limitations, of trade in contributing to SDG 15, our comments have been organized by means of implementation—15.a, 15.b, and 15.c—rather than surveying all 12 targets.

### 9.2 How Does the Traditional Analysis of Trade and Environment Apply to Trade in Natural Resources?

Before discussing existing and proposed uses of trade to promote the terrestrial environment via SDG 15, we begin with background on how the interaction of trade and environment has traditionally been analyzed.

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<sup>1</sup> The full text of SDG 15 and the associated targets appear in the Appendix below.

The classical framework for examining links between trade and the environment posits that liberalization leads to scale, structure (sometimes called composition), and technique changes, each with environmental impacts of a different extent and nature.<sup>2</sup> The questions to be studied under such a framework are the following: (i) whether increased economic activity from trade will lead to negative environmental effects (scale effect); (ii) what might be the new mix of dirty or clean goods traded and processes used (composition effect); and (iii) whether cleaner (or dirtier) technologies will be diffused (via a technique effect). Attempts to incorporate this conceptualization into quantitative work have focused on the effects, via prices, of the removal of tariffs for manufactured goods.<sup>3</sup> Trade in land-based natural resources—the subject of SDG 15—is usually subject to low tariffs, but can face nontariff measures, which do not lend themselves easily to quantification in price-based economic models. Matching changes in trade flows with environmental data is even more difficult as such data are patchy in coverage. In addition, they are collected at national levels, whereas environmental effects are generally local, particularly those arising from natural resource extraction and use. Even more important, environmental policy boils down to laws and regulations and how they are implemented by institutions, both nationally and at the subnational level. Environmental policy reflects the specificities of the biome, ecosystem, and environmental medium addressed. They also respond to the social and political priorities of a state's polity. If the scale, composition, and technique effects are difficult to translate into environmental impacts for the manufacturing sector, they are not well designed to illuminate how regulatory policies and their implementation will react to liberalized trade in natural resources.

The mushrooming of regional trade agreements (RTAs) since the mid-1990s prompted fears that increased trade and trade-induced growth would be detrimental for the environment. This fear was essentially an expression of the scale effect: more trade would lead to more pollution and natural resource depletion. Defenders of freer trade claimed that it would shift the product mix and bring better techniques to relieve the increased pressure on air, water, and soil. To clarify what was likely to happen, or had happened, environmental assessments became mandatory, first in the United States (US) and Canada, and later in the European Union (EU) and other European countries.

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<sup>2</sup> See OECD (1994), OECD (2000), and Grossman and Krueger (1993).

<sup>3</sup> See Peters (2011), which matches GTAP (trade database) with emissions of carbon dioxide, but not local environmental effects.

These reviews adopted various methodologies. Some reviewed the effects of past trade liberalization to inform the future, while others predicted how trade would affect the environment following liberalization.<sup>4</sup> Because prediction exercises were potentially so vast, *scoping* (to circumscribe which aspects of trade liberalization would be examined) and *screening* (looking at potential hotspots, either geographically, e.g., at border crossings, or by environmental medium) streamlined the exercise to manageable proportions. Where weak points were identified, the reviews recommended flanking policies to accompany trade liberalization with the objective of mitigating the negative aspects and strengthening the positive ones associated with greater trade flows.

One result of the scoping and screening was a tendency for the reviews to emphasize sectors, focusing on agriculture including forestry, fisheries, and timber, or services sectors such as tourism. In a few cases, this led to separate language in the trade agreement on sector issues, or an annex thereto. For example, an annex in the US–Peru Free Trade Agreement is on illegal timber trade.<sup>5</sup> The free trade agreement between the People’s Republic of China and Peru includes provisions on mining, while that between the PRC and Costa Rica includes those on agriculture. The environmental chapter in the EU CARIFORUM Economic Partnership Agreement concludes with a summary list of cooperation priorities, including facilitation of such voluntary schemes as labeling and accreditation, and facilitation of trade in timber and wood products from legal and sustainable sources. In other trade agreements, a separate implementation mechanism or an Environment Committee has established a work program on sector issues.

Some RTAs, in recognition of a general lack of data or the scope of the interrelationships between trade and growth and environmental effects, mandated a monitoring role.<sup>6</sup> The complex relationships between

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<sup>4</sup> George (2014b) listed the environmental assessments of RTAs carried out by Canada, the US, and the EU. Lists for earlier years can be found at <http://www.oecd.org/trade/oecdtradeandenvironmentworkingpapers.htm>

<sup>5</sup> The US–Peru Trade Promotion Agreement. Annex 18.3.4: Annex on Forest Sector Governance. [https://ustr.gov/sites/default/files/uploads/agreements/fta/peru/asset\\_upload\\_file953\\_9541.pdf](https://ustr.gov/sites/default/files/uploads/agreements/fta/peru/asset_upload_file953_9541.pdf)

<sup>6</sup> The Commission on Environmental Cooperation was set up in an environmental side agreement with the North American Free Trade Agreement. In the case of the US–Central America Free Trade–Dominican Republic trade agreement, the Organization of American States has been used to carry out technical assistance and monitor these activities. An independent audit of the monitoring roles undertaken for US RTAs can be found in US Government Accountability Office (2014).

increased trade and impacts on the environment were also checked by testing a series of hypotheses, such as the “race to the bottom” or the pollution haven hypotheses.<sup>7</sup>

In sum, despite the theoretical literature, the questions posed by trade and environment policy makers when negotiating new agreements have rarely focused on assessing scale, composition, and technique effects. As the interaction of the various effects is in the end an empirical question, without adequate environmental data at local level, the focus of negotiators was to study regulatory effects. How adequate were existing environmental regulations? Was national regulatory capacity, particularly the institutional structure, resilient enough to adapt to the environmental challenges arising from the new trade patterns?

### 9.3 Trade as a Means of Implementation in Regulating for Sustainability Outcomes

The word *trade* is not used in the title of SDG 15, nor does it appear in the text of the associated nine targets. On the other hand, the following three means of implementation under SDG 15 are trade-relevant:

*15.a Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems*

*15.b Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation*

*15.c Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities*

Trade can help to (i) *generate financial resources from all sources* (15.a), (ii) *provide incentives* (15.b), and (iii) *increase the capacity of communities to pursue sustainable livelihood opportunities* (15.c). The question then becomes how to operationalize the various means of implementation and increase their effectiveness. Examples of innovative

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<sup>7</sup> See Chapters 2 and 3 in Frankel (2009).

interventions promoting sustainable trade in natural resource products, including biodiversity products and wildlife species, are set out below. These are significant and growing. However, with few exceptions, they remain fairly limited. Problems have arisen in attempts to *scale up* and extend the initiatives' overall sustainability. Serious reflection among environmental nongovernment organizations (NGOs), firms, and, more recently, certain governments is currently under way. In the final section, it will be suggested that building on experience needs to be complemented with novel approaches to scale up sustainable outcomes and make a greater contribution to the fulfillment of the SDG 15 targets.

### 9.3.1 Evolving Attitudes about Trade in Environmentally Sensitive Products

Promoting international trade has in the past been considered at odds—even intrinsically harmful—for natural resources and environmentally sensitive products. Trade was perceived as the driving force for the depletion and even extinction of wildlife and thus had to be strictly controlled. Trade policy instruments, such as quotas and even import bans, bolstered conservation by curtailing the international exchange of environmentally sensitive products. For example, on the grounds of biodiversity loss caused by poaching and exports of a few of the “charismatic” mega-species, the conservation movement was behind the adoption of an international convention to restrict trade in endangered species. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) was adopted in 1976. Based on US conservation laws, it is also known as the Washington Convention. Viewed from this historical perspective, using trade and trade policy to *promote* sustainable management of natural resources and ecosystem products, as targeted under SDG 15, might appear to be difficult, or even nigh impossible.

International attitudes have evolved since the Earth Summit held in Rio de Janeiro in 1992. Agenda 21 adopted at the Rio Summit incorporated the principles of sustainable consumption and sustainable production. It also gave birth to three environmental conventions, including the Convention on Biological Diversity (CBD). In this convention, conservation and sustainable use are balanced as two separate goals. Many of the CBD initiatives to halt biodiversity loss—such as offsets, “no net loss,” and payments for ecosystem services<sup>8</sup>—are national approaches

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<sup>8</sup> See (OECD 2010) for a survey of environmentally effective and cost-effective systems of payments for ecosystem services (PES); none of these involve international trade.

that do not involve international trade.<sup>9</sup> The CBD has since developed its tool kit and today is cooperating with a series of trade-friendly initiatives to promote conservation and sustainable use. Which lessons can be drawn from trade-relevant activities in biodiversity environmental agreements about trade's potential role in promoting SDG 15 targets?

In assessing how trade can contribute to promoting sustainable outcomes for the terrestrial environment, as well as its limitations, this chapter examines two separate and, until recently, distinguishable paths. The first group takes a regulatory approach that relies on laws and institutions for implementation and enforcement. That is, it is governmental and has a mandatory character. The second involves standards used by private actors—NGOs, firms, farms, mills, etc. Some prefer referring to these as private sustainability standards (PSS), and others as voluntary sustainability standards (VSS). As they are nongovernmental and voluntary in nature, we will use VSS to emphasize their non-mandatory nature.

Of the two sets of approaches that use trade as a lever to finance the sustainable management of biodiversity and ecosystems, the first involves sales of wildlife or natural products, either directly or as inputs to a manufactured product. Since nature-based goods can be overharvested, they are often subject to regulation. To remain sustainable, trade in biodiversity products harvested from nature must, on the supply side, respect species-specific biological factors. Governance issues involving traders and institutions are also critical, as is careful attention to market drivers.

The second approach, based on VSS, is widely used in the case of internationally traded commodities such as coffee and other beverage items, palm oil, soy, and timber. Producers, importers, or distributors work with a technical body, often in a “roundtable” multi-stakeholder group, to develop standards prescribing the sustainable production (or harvesting) practices for the commodity in question. In turn, the plantations, farms, or other enterprises opting to use these standards are submitted to auditing by independent third parties.

Each of these two approaches to support trade in natural resource products, and their limitations, is discussed below in sections 9.4 and 9.5.<sup>10</sup>

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<sup>9</sup> Under the CBD, the Nagoya Protocol on Access and Benefit-Sharing, adopted in 2010, has trade-relevant aspects, as does the Cartagena Protocol on Biosafety adopted in 2000.

<sup>10</sup> Certain international commodities such as timber can be farmed as well as harvested from the wild. Sustainable international trade in timber can be facilitated both by certifying voluntary standards and through laws and legal-binding regulations at national and international level. See section 9.6.

## 9.4 Mandatory Regulations: Governmental Involvement in Regulating for Sustainability

In this section, we examine the family of initiatives involving trade to promote sustainability that are based on laws and mandatory regulations.

As discussed above, the 1992 Earth Summit ushered in the concept of *sustainable use* in international environmental texts. Opened for signature at the Summit and entering into force the following year, the CBD is an international treaty for the conservation of biodiversity, *the sustainable use of the components of biodiversity*, and the equitable sharing of the benefits derived from the use of genetic resources. In Article 2, the Convention defines *sustainable use* as

*the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.<sup>11</sup>*

It is significant of the evolving consensus in the conservation and sustainable use debate that the Agenda for 2030 adopted in September 2015, setting out the universally agreed SDGs, makes extensive references to *sustainable use*. In SDG 15, *sustainable use* appears in the overall chapeau in SDG 15 and in targets 15.1 and 15.a.

*SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss*

*15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements*

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<sup>11</sup> CBD. Article 2. <https://www.cbd.int/convention/articles/default.shtml?a=cbd-02>  
The CBD Preamble is also relevant, stating, “Reaffirming also that States are responsible for conserving their biological diversity and for using their biological resources in a sustainable manner.” <https://www.cbd.int/convention/articles/default.shtml?a=cbd-00>



*15.a Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems*

*15.c Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities [emphasis added]*

### **9.4.1 Legal, Traceable, and Sustainable Trade: 40 Years of CITES**

Is trade inherently *sustainable use*-friendly? Or can it be crafted to produce such results? Since certain resolutions adopted by the parties to CITES recognize the benefits of trade, some members argue that this is the case. Species-based conservation approaches were insufficient to halt the decline of many populations in the wild, and trade was cast as the villain threatening the survival of many of the charismatic mega-fauna. Conservation movements successfully advanced their cause in the 1960s and early 1970s, leading to the adoption of CITES. CITES was structured to approach conservation via restricting imports and exports of endangered species of wild plants and animals. Even though it was clear that international trade was not the only threat, CITES was set up to focus on trade; it does not address other key causes of biodiversity loss such as land conversion of natural habitats. Dating from 1975, that is, 17 years before the Rio Earth Summit, the Convention does not contain the term “sustainable use.” Nonetheless, since its inception, CITES has been advancing cautiously toward sustainable use, with several key resolutions being passed and the CITES Secretary-General often speaking of “legal and sustainable use” or of the Convention’s role in “regulating for legal, sustainable and traceable trade in wildlife” (WTO and CITES 2015).

The three appendixes to the Convention offer varying protection levels. Species listed on Appendix I and taken from the wild are prohibited from entering international commercial trade. Exceptions exist for cases where ranching or breeding in captivity is allowed and specimens are then returned to the wild. Species listed on Appendix II that are taken from the wild may be traded if such trade is legal, sustainable, and traceable. Exporting countries must first make a “non-detriment” finding concerning such Appendix II specimens. Guidance recommends that socioeconomic factors also be taken into account,

but, in the end, biological findings on the species take precedence. National jurisdictions may enlist the cooperation of other parties for species that they determine need protection and that they decide to place on Appendix III. International trade that is legal and traceable in such species is allowed. A major development in CITES was the issuance of its general guidance document adopted at Conference of the Parties (COP) 16 in 2013. *Strategic Vision: 2008–2020* contains references to CITES' contribution to sustainable use.<sup>12</sup> This is most relevant to Appendix II specimens, which represent 96% of species covered by the Convention.

In a clear manifestation of the shift away from solely focusing on illegal trafficking, and toward operationalizing sustainable use and trade, CITES set up the Working Group on CITES and Livelihoods. Developed with support from the Organization of American States, a handbook has been developed to help stakeholders make rapid assessments of the impacts of listing species on a CITES Appendix, as well as guidelines on how to mitigate negative impacts (OAS 2015).

The key operational mechanism of CITES is the system of permits and certificates to track shipments of CITES-listed specimens. Member state management authorities cooperate to match import with export permits. Over the 40 years of its existence, CITES has made progress in combating corruption and associated mafia crime involved in lucrative wildlife trade through the institutionalized cooperation, not only with national customs authorities, but also with organizations such as INTERPOL. One recent concrete advance involves fighting fraudulent documentation for shipments (paper permits were simply photocopied multiple times, exceeding permissible export quotas) and accompanying corruption by instituting the use of electronic forms that were developed in conjunction with the World Customs Organization. The CITES Secretary-General, John Scanlon, has recently stated that the use of such forms “. . . offers a taste of the future for CITES implementation, where CITES trade processes are fully electronic” (CITES 2011).

A high profile and controversial case is that of the *black rhinoceros*, which are farmed in southern Africa. They breed easily in captivity

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<sup>12</sup> “CITES vision statement: Conserve biodiversity and contribute to its sustainable use by ensuring that no species of wild fauna or flora becomes or remains subject to unsustainable exploitation through international trade, thereby contributing to the significant reduction of the rate of biodiversity loss and making a significant contribution towards achieving the relevant *Aichi Biodiversity Targets*.” <https://www.cites.org/eng/res/16/16-03.php>

and their horns can be harvested; their horns grow back at a rate of 0.9 kilogram per year following best practices. Despite relatively favorable biological attributes of the species, Save the Rhino, an NGO dedicated to saving the rhino, states that it carefully assesses governance and market aspects as well the biological attributes. Concerning the market and governance aspects on the supply and the demand side, Save the Rhino believes that

*. . . more detail [is needed] on how a trade in rhino horn will be regulated and how the proponents would ensure that income generated goes back into rhino conservation efforts. Other pre-conditions include getting a better grip on the abuse and corruption that are contributing to the present high levels of illegal trade, auditing horn stockpiles and increasing the database of horn DNA samples . . . Without stringent monitoring, there are risks that a legal trade could serve as a route for the illicit tracking of rhino horns. On the demand side, the main producing country still needs to establish a credible trading partner. . . . Being a credible trading (importing) partner will entail a much higher level of law enforcement and political will to combat the illegal trade in rhino horn than has been evidenced so far. How will rising affluence in other Asian countries affect the demand for rhino horn? (Save the Rhino 2013).*

Their statement underscores the need for balancing species-specific biological attributes, demand-side (actual and potential) market drivers, and governance aspects, not only in the range state, but also in the importing countries. In the end, a resolution to allow greater trade in rhino horn from range states with sound management practices was debated and rejected at the CITES COP 17 held in South Africa in September 2016.

Illegal wildlife trade has taken on international proportions also with its increased link to organized crime. A recent Organisation for Economic Co-operation and Development (OECD) report finds that the networks involved in wildlife trafficking between sub-Saharan Africa and Asia are of particular concern from a security policy perspective due to their associations with listed terrorist organizations (OECD 2016: 72). The CITES Secretariat and the United Nations Office on Drugs and Crime are partners in the International Consortium on Combatting Wildlife Crime, alongside INTERPOL (INTERPOL 2016), the World Bank, and the World Customs Organization. The Consortium is chaired by the CITES Secretariat (ICCWC 2013).

## 9.4.2 CITES and the Livelihoods of Local Communities

SDG means of implementation 15.c has two distinct parts:

- (i) combating poaching and trafficking of protected species,<sup>13</sup> and
- (ii) including by increasing the capacity of local communities to pursue sustainable livelihood opportunities.

In large part due to discontent on the part of range states,<sup>14</sup> CITES established the Working Group on CITES and Livelihoods in recognition of the heavy dependence of rural communities on wild species for their livelihoods.<sup>15</sup> The working group was given the mandate to develop tools for sustainable implementation of CITES listings, the mitigation of negative impacts, and the enhancement of positive opportunities for rural communities. This corresponds precisely to the second part of SDG 15.c: *increasing the capacity of local communities to pursue sustainable livelihood opportunities*. CITES trade regulation mechanisms opened a bit further, a reflection of the considerable distance traveled by the Convention since 1975.

An impressive success story concerns a seriously threatened species and the livelihoods of a local community living at 4,000 meters elevation in the Andes. The vicuña, whose hair is considered the finest of natural wools, had been listed as an endangered species under Appendix I. This meant that trading vicuña products was illegal. Rampant poaching of the animal had led to near extinction of the species. Unless CITES changed

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<sup>13</sup> The first part of target 15.c is duplicative of another target under SDG 15. Target 15.7 reads, “Take urgent action to end poaching and trafficking of protected species of flora and fauna, and address both demand and supply of illegal wildlife products.” The text of 15.7 is more complete with its reference to “flora and fauna” and its injunction to address “both the demand and supply of illegal wildlife products.” This is significant since CITES permits are essentially supply-side in nature. Underscoring demand-side measures shows recognition of their complementary nature to import and export permitting. Campaigns can curtail demand by promoting substitutes, not taken from the wild. Or demand promotion can also be used if the biological and governance factors contribute to putting an increased legal supply on the market that can be traded to finance conservation measures to ensure the protection of the species in question.

<sup>14</sup> In the early 1990s, Zimbabwe was on the verge of withdrawing from CITES. Its influence by remaining a member is described in “Zimbabwe and CITES: influencing the international regime.” See Hutton and Dickson (2000).

<sup>15</sup> In southern Africa, community-based natural resource management (CBNRM) has a long tradition in practicing management of natural resources, including wildlife, through local governance structures at the villages, and was one of the inspirations for the Working Group on CITES and Livelihoods. At a 2011 symposium, the Secretary-General of CITES expressed his view that “CBNRM is not a panacea . . . but it is one viable option to explore when determining how to achieve more effective implementation of the Convention.”

the vicuña's status, the local communities would not be allowed to trade the animal's hair. CITES partially granted a trade ban variance in 1987 for certain herds and later down-listed all of Peru's vicuña population. Management of the herds through regular shearing made the animals of no interest to poachers: "a shorn vicuña is a saved vicuña."<sup>16</sup> CITES parties made a similar decision later to transfer from Appendix I to Appendix II the vicuña population of Ecuador, for the exclusive purpose of allowing international trade in wool sheared from live vicuñas and in cloth and items made thereof, including luxury handicrafts and knitted articles.

Another example can be found on the side of flora. CITES had carefully regulated Candelilla wax, derived from an eponymous shrub in northern Mexico. Traded for use in lipsticks, the CITES-listed product is now considered to be managed according to best practices. Retailing is allowed, with some 20,000 Mexican farmers making a living from production and trade in the wax.

As parties to CITES recognize the potential impacts on livelihoods of rural communities<sup>17</sup> of their decisions,<sup>18</sup> associations of indigenous communities have become active in following CITES deliberations to assess the implications for their biodiversity-based livelihoods. Groups such as the Canadian Inuit have increased their influence in CITES discussions. This has not been without controversy. At previous COPs, for example, the proposal by the US delegation to place the polar bear on Appendix I was not adopted.<sup>19</sup> This issue opposes the US and

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<sup>16</sup> See Lichtenstein, G. 2011. Use of Vicuñas (*Vicugna vicugna*) and Guanacos (*Lama guanicoe*) in Andean countries: Linking community-based conservation initiatives with international markets. In *In CITES and CBNRM, Proceedings of an international symposium on "The relevance of CBNRM to the conservation and sustainable use of CITES-listed species in exporting countries,"* ed. M. Abensperg-Traun, D. Roe, and C. O'Criodain. See also the video CITES and Vicuñas: A Conservation Journey. <https://www.youtube.com/watch?v=R0nMnfBDUQ4> (accessed 22 March 2017).

<sup>17</sup> For CITES, "rural communities" include indigenous and local communities.

<sup>18</sup> A recent regional trade agreement broke ground by referring to indigenous communities in its text. The parties reiterate their commitment to, *subject to national legislation, respecting, preserving and maintaining the knowledge, innovations, and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity, and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices.* Article 20.13: Trade and Biodiversity from the Trans-Pacific Partnership Agreement (2016).

<sup>19</sup> Transfer from Appendix II to Appendix I of *Ursus maritimus* (polar bear) was voted down by the parties in 2013. The proposal had been expected to be tabled again at COP 17 in September 2016 but was withdrawn after debate in the Animals Committee. See also IUCN Red List of Threatened Species page on *Ursus maritimus* (<http://www.iucnredlist.org/details/22823/0>) for details on the use and trade and differing range state policies concerning the polar bear.

Canada, reflecting differences in conservation NGOs and indigenous communities. In the case of the polar bear, the International Union for Conservation of Nature and Natural Resources (IUCN) Red List states, “Loss of Arctic sea ice due to climate change is the most serious threat to polar bears throughout their circumpolar range.” CITES’ mechanisms are designed to regulate trade when it is determined to be a significant factor threatening the species. Other biodiversity conventions<sup>20</sup> focus on other causes of biodiversity loss such as habitat destruction, overexploitation, degradation, illegal harvest and trade, pollution, and climate change.

### **9.4.3 Facilitating Sustainable Trade in Wildlife Products: Support from the International Trade Centre, BioTrade, and Union for Ethical BioTrade**

The primary emphasis in CITES is to ensure that international trade does not threaten the survival of species. Permits and certificates are used to regulate international trade in the listed species. Technical assistance activities have focused on capacity building in the national management authorities to strengthen the implementation of regulatory responsibilities under the Convention. Even today, if “legal and sustainable use” or “legal, traceable and sustainable trade” have become part of the Convention’s parlance, CITES still does not speak of promoting international trade. Other members of the UN family, such as the International Trade Centre (ITC) and the UN Conference on Trade and Development (UNCTAD) BioTrade, and offshoots like the Union for Ethical BioTrade (UEBT), have stepped in to complement the regulatory activities of CITES with a view to facilitating trade in nature-based biodiversity products, including wildlife.

Promoting sustainable trade from the point of view of providing incentives for the conservation of endangered species is complex. A decision to allow trade to promote sustainable use needs to be carefully evaluated along the lines of the (i) species-specific biology; (ii) governance structures in place, and incidence of corruption—game wardens, policing, and customs authorities; and (iii) both actual and potential market demand when it has been repressed.<sup>21</sup> Farming of the Nile crocodile for their hides and meat has been a CITES success

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<sup>20</sup> The seven biodiversity-related conventions are (i) CBD, (ii) CITES, (iii) Wetlands (Ramsar), (iv) Migratory Species, (v) Plant Genetic Resources, (vi) World Heritage, and (vii) Plant Protection. For the full names and a short description of each convention, see CBD Biodiversity-related Conventions. <https://www.cbd.int/brc/>

<sup>21</sup> These factors are spelled out in detail in Cooney et al. (2015).

story. Once down-listed to Appendix II, the species could be farmed by borrowing eggs from the wild, as long as a certain share was returned after hatching. The species-level biological factors (each female lays dozens of eggs) and a strong consumer market demand were particularly favorable in overcoming doubts about potential governance issues. Crocodile farms are a thriving business in South Africa, Zimbabwe, Zambia, and Kenya, which have the largest farms, bringing huge profits to the ranch owners.

The ITC has supported an important project on trade in python skins that are used in handbags, shoes, and other fashion accessories. The value of the skins is estimated to be around \$1 billion per annum, and the extent of illegal trade in python skins is estimated to be equal to that of the legal trade. In cooperation with the ITC, a BIOTRADE report, with financial backing from Gucci and other major fashion brands, has made suggestions for an effective *traceability* system involving the tagging of skins. The challenge would be for such a scheme to collect data on species, place, and date of capture and of slaughter, gender, and length. Many of these proposed techniques such as *permitting*, *electronic tracing*, *tagging*, and *farming* are derived from experience gained in promoting sustainable trade in CITES-listed species. The trade-friendly lessons from CITES have spread to facilitate trade in other wildlife species.

The BioTrade Initiative was set up in 1996 under the auspices of UNCTAD to support the implementation of the Convention on Biological Diversity (CBD). In line with CBD objectives, it responds to the trade-related aspects of CBD Article 10 on sustainable use, Article 11 on incentive measures, Article 15 on access to genetic resources, and Article 8(j) on traditional knowledge. The initiative can be termed a matchmaker between developing country firms and northern firms. It now has 20 years of experience in leveraging trade as an incentive for the incorporation of conservation and sustainable use criteria into private sector initiatives, and works with governments in 21 biodiversity-rich countries. As an intergovernmental organization, UNCTAD generally starts with government trade promotion agencies and the Ministry of Environment with a view to identifying national biodiversity-based companies. Personal care products, fashion, nature-based tourism, medicinal plants, natural fibers, as well as wildlife products have been the focus of the BioTrade initiative. In 2011, sales of BioTrade beneficiary organizations amounted to \$4.1 billion. In 2013, turnover was deemed to be \$5.2 billion (Reiter 2015). The BioTrade Facilitation Programme launched its third phase in late 2015, with the aim of offering poor people a viable economic opportunity from nurturing their biological resource endowments. The overall objective is to

mainstream BioTrade in relevant multilateral, regional, and national processes and strengthen the policy and regulatory environment for BioTrade sectors.

The aim of the UEBT, founded in 2007, is to promote ethical bio-trade practices by offering its business members independent verification, technical support, and networking opportunities for biodiversity-based innovation and sourcing. This association currently stands at 40 companies—mostly in cosmetics, pharmaceuticals, and food—and 20 affiliates. In 2015, these companies had a joint turnover of just over €4 billion. UEBT helps companies negotiate the regulatory minefield of trading with local producers around the world, while ensuring that benefits reach all of those involved, particularly holders of genetic resources in the developing world. Rather than *certification*, the UEBT offers its members *verification*—that is, audits to establish that the private firms are operating in accordance with the Ethical BioTrade Standard (based on the seven BioTrade principles, the first two of which are conservation and sustainable use of biodiversity) (UNCTAD 2007). The UEBT philosophy behind the verification is to replace a pass or fail type audit with a detailed assessment of a member’s biodiversity management system and the progress being made vis-à-vis the work plan. The process also involves an impact assessment standard aligned with the code of impacts of the ISEAL Alliance,<sup>22</sup> of which UEBT is a member. In exchange for verification, member companies may append the UEBT logo, as well as other sustainability seals for which they have been certified.

Examples of UEBT member activities include (i) a Colombian company trading a blue colorant for food and cosmetics from the fruit of the *Genipa americana*; (ii) a large Swiss company producing hundreds of natural cosmetics and pharmaceuticals that has targeted use of 80% plant-based raw materials from organic and biodynamic cultures and a biodiversity management system that ensures traceability; (iii) a company in Burkina Faso specialized in shea butter for cosmetics working with female producers organized in cooperatives; and (iv) a Vietnamese company, the largest traditional medicine producer in Viet Nam, focusing on improving practices for the sourcing of its natural ingredients and the research and development of medicinal plants.

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<sup>22</sup> The ISEAL Alliance’s “Code of Good Practice for Assessing the Impacts of Social and Environmental Standards” helps standards systems to better understand the sustainability results of their work, as well as the effectiveness of their programs. See ISEAL Alliance. Impacts Code. <http://www.isealalliance.org/our-work/defining-credibility/codes-of-good-practice/impacts-code>



Measured in terms of global trade flows, initiatives like the ITC, BioTrade, and UEBT pale in significance to the many billions of dollars of trade derived from other terrestrial flora and fauna, such as timber, coffee, soy, and palm oil. If these initiatives, based on legal regulation, are currently marginal in the overall picture for the conservation and sustainable use of biodiversity, what is their potential to contribute significantly more? Proponents are looking for ways to ratchet up their impact in terms of global trade in not dissimilar ways as voluntary standards movements are talking about increasing overall impact through adopting a more holistic approach to agriculture and rural development.

## 9.5 The Voluntary Path: Sustainability Standards-Cum-Certification

*15.a Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems*

Voluntary sustainability standards (VSS), combined with certification procedures, were set in motion in the 1970s,<sup>23</sup> and became popular as a concrete approach to fostering sustainability following the Rio Conference in 1992 and adoption of Agenda 21. A congruence of different factors explains the turn to voluntary, nongovernmental schemes. NGOs were disappointed with governments' refusal to agree to more international conventions, such as that on forests. Other important factors include the belief that the private sector was more closely attuned to production issues and to consumer tastes and the distaste of several large OECD governments for developing regulations. From only a handful in 1970s and 1980s, these have grown to more than 500, as cataloged in recent reports. This section focuses on the use of standards and certification to promote production, consumption, and trade in sustainably managed agricultural commodities. It provides a brief overview on how they have progressed since the Earth Summit as well as the bumpy road they are currently traveling.

The number of environmental labeling and information schemes (ELIS) was recently cataloged at 544 in a 2013 OECD study (Gruère

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<sup>23</sup> An exception is the organics movement that dates back to Rudolf Steiner's writings in 1924.

2013), based on a data set managed by Ecolabel Index<sup>24</sup> together with those discussed in OECD reports. Most of the phenomenal growth in ELIS occurred between the late 1990s and 2010. There are many ways to categorize the schemes. The 2013 OECD study dissected the universe of 544 ELIS in a dozen different ways. Most pertinent for this discussion concerns the environmental focus area and mode of governance and ownership, as well as the type of auditing and verification (first, second, or third party). In terms of environmental focus, the relative shares of schemes attributed to biodiversity (11%) and natural resources (20%) had dropped in 2012 from the nearly one-half of total schemes in 1990, due to the increase over this period in energy and climate-related schemes. In terms of modes of governance, nonprofit voluntary schemes clearly dominate over the 32-year period studied.

Credibility of the standards, as measured by type of auditing and verification, reveals that while third-party certifiers (independent, arms-length accredited bodies) represent about two-thirds of the total universe studied, second-party audited or verified schemes (performed by a party other than the producing firm, but with a user interest in the products, such as traders, retailers, or consumers) increased significantly. As discussed below, access to schemes at an affordable price and the quality of certification are currently among the most debated issues in the voluntary standards world.

Some figures often used as measures of VSS success are set out here for the highly traded commodities—coffee, palm oil, and soy<sup>25</sup> (those that have been the focus of extensive standards activity). According to the State of Sustainable Markets compiled by the ITC, Research Institute of Organic Culture (FiBL), and International Institute for Sustainable Development (IISD) (ITC 2015), VSS-compliant areas that were planted or harvested for nine commodities and the focus of the 14 standards surveyed continued to show exceptional growth in 2013 and 2014. The Roundtable on Sustainable Palm Oil showed a thirtyfold increase of its area between 2008 and 2014, and at that point covered some 15% of the global oil palm area.

The State of Sustainability Initiatives (Potts 2014) estimated an impressive 41% growth overall for trade in the group of VSS-compliant commodities studied, outpacing by far the 2% growth in the conventional commodity markets. In that review, coffee, cocoa, and palm oil held the

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<sup>24</sup> Ecolabel Index is the largest global directory of ecolabels, “currently tracking 465 ecolabels in 199 countries, and 25 industry sectors” (as of mid-November 2016). <http://www.ecolabelindex.com/>

<sup>25</sup> As forests are the focus of SDG target 15.b, timber is discussed below in section 9.6.

top places in 2012 for market penetration compared with their rankings in 2008. Standard-compliant coffee, which led in terms of market penetration, reached a 40% market share of global production in 2012 (up from 15% in 2008). Other commodities with significant market shares in 2012 include cocoa (22%, up from 3% in 2008) and palm oil (15%, up from 2% in 2008).

This incredible success of VSS-compliant commodities in penetrating markets—national and international—also explains why observers are pessimistic about the degree to which they can continue along the same path. Now facing saturated markets, they are the victims of their own success.

There are a number of consequences of the VSS-compliant no longer being a niche market phenomenon. For a number of the “successful” VSS-compliant commodities, supply is beginning to, or already has, exceeded the market demand for the sustainable variety. The excess ends up being sold as uncertified, exerting downward pressure on prices. With the withering of the price premiums, producers in a market-driven scheme begin to cut costs on the investments made to ensure their commodity is sustainably grown or harvested. This is another consequence of what Jason Potts of the IISD termed the Sustainability Paradox (Potts et al. 2014, Box 4.1). The reliance of such initiatives on market forces leaves the distribution of supply (and benefits) to those who can provide compliant goods at the lowest cost. These tend to be the more well-off producers who have already absorbed the costs of transitioning to sustainable practices. The unintended outcome is that VSS are gaining traction in regions and markets where they are needed least. For some internationally traded commodities such as timber, for which market access is increasingly conditioned by certification to a forest management standard, the producer may have no choice but to absorb the costs, even in the absence of a price premium, or lose market. In such cases, the “voluntary” in VSS effectively becomes a mandatory standard (UN Forum on Sustainability Standards [UNFSS] 2016).

The outlook for further growth is dampened by market surveys of consumers that often reveal that sustainability is an important, but not a dominant factor in decisions to buy. A recent OECD study (Vringer et al. 2015), for example, underscores a certain split focus of consumers. They reply in surveys that sustainability is important to them, but apparently not when confronted with higher prices. The lack of price incentive tilts their decision in favor of the lower-priced product, leaving promotion of the collective good to others. In other words, the “warm glow” effect of consumers’ values does not necessarily carry over to their buying decisions.

Another key consideration is that stakeholders are increasingly demanding that the actual environmental *impact* be verified and measured. Sunken costs were spent in developing standards and logos; recurrent expenditures for auditing and other verification costs to assess conformity to receive certification are even greater. Those having financed the development of the VSS want to know whether the costs are having a real impact. Recent reviews conclude that while standards have contributed to a change in farming and harvesting *practices*, few evidence-based peer-reviewed studies are available to answer the questions about outcome or impact (Steering Committee of the State-of-Knowledge Assessment of Standards and Certification 2012). Existing studies tend to be incomplete, and embrace a host of methodologies, and hence are not comparable. They have generally not built in counterfactuals. The ITC/FiBL/IISD experts conclude in *The State of Sustainable Markets* (ITC 2015) that

*. . . the degree to which they are improving farm performance remains largely unknown. The absence of consistent data on field level impacts for many standards is one obvious bottleneck to making such determinations.*

According to the ISEAL Alliance, the situation of collecting data and reports on impacts on actual outcomes (as opposed to outputs) is improving. A special website has recently been launched collecting documentation on impacts: [www.sustainabilityimpactslearningplatform.org](http://www.sustainabilityimpactslearningplatform.org)

### **9.5.1 Accomplishments and Challenges of Voluntary Sustainability Standards**

Generally, the VSS system has served *business interests* well. Firms have shifted the emphasis over recent years away from statements of their *corporate social responsibility* and their public image in terms of support to sustainable development. A more recent approach integrates VSS-compliant commodities into supply chains to fully embrace this risk management tool. Recourse to VSS as a key tool for managing their supply chains is no longer a matter of simply burnishing “green” credentials for the public, but has become an integral part of a business model designed to protect their reputation and trademarks—often a sizeable part of a company’s assets.

At the same time, complaints are rife that there are too many standards—they are overlapping, duplicative, and bureaucratic (UNFSS 2016). Certain business-to-business standards require more than one certification, even if in principle they are “voluntary.” For example,

GlobalGAP may require certification from UTZ, Rain Forest Alliance, and Fairtrade, and organic standards, in parallel, for the product to gain access to supermarkets.

An obvious response would be to find common denominators and simplifying to meta-standards, or to keep the range of standards, but work toward mutual recognition of those that are similar or have the same objective.<sup>26</sup> Such attempts have run into difficulties and progress has been slow. Reasons include the pride of authorship factor from NGOs that have spent years and enormous sums to develop the standards. Certification to verify adherence to the standard is often a lucrative source of income for large NGOs. Multiplicity of standards and the related confusion and overlap also tend to fuel donor-funded capacity-building projects implemented by NGOs. While willing to promote discussions on process, including promoting consultations with representative stakeholders and the review of drafts, many stakeholders do not wish to negotiate the substance of the standards which have become “holy grail.” Any movement to harmonize has always been difficult in the standards world. On the other hand, greater hope has been put in establishing mutual recognition protocols where there has been some limited progress, for example, in the case of organics standards. Ulrich Hoffmann<sup>27</sup> concludes:

*If one attempts to grossly evaluate the effect of PSS in moving towards truly sustainable markets and associated production and consumption patterns, one must realistically conclude that such standards are one, not unimportant tool whose real impact should however not be overrated.*

More than one observer surveying and following the standards world has set the bar at approximately 15%–20% as the limit for voluntary sustainability standards to penetrate markets.<sup>28</sup> Such a prediction is commodity- and market-dependent of course, as well as a function of the national consumer market and its growth potential. The point is not the precise figure, but the ambient pessimism about VSS as a panacea. We are far from the optimistic and enthusiastic support for this

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<sup>26</sup> In the case of timber, the Programme for the Endorsement of Forest Certification (PEFC) is bringing some 40 national standards together under one meta-standard.

<sup>27</sup> A former UN official, Hoffmann is one of the founding fathers of the UNFSS and the FAO/IFOAM/UNCTAD International Task Force on Harmonization and Equivalence in Organic Agriculture.

<sup>28</sup> See also UNFSS Discussion Paper no. 6, which elaborates on this issue: <http://unfss.org/documentation/discussion-paper-series/>

market-based and consumer-driven means to bring sustainable management to commodity production that was evident when VSS were launched some 20 years ago.

All too often the impression is created that the failure to mainstream VSS-compliant production is caused by lack of efficient management of those schemes or insufficient capacity-building support, when the principal reason to get past the 15%–20% bar is the lack of any progress on internalization of environmental and social costs of conventional production, starting with the removal of misplaced subsidies (see Policy Coherence section below).

Another view from one of the strongest supporters of the standards-cum-certification model is revealing:

*Companies have supported sustainability standards and certification over the last fifteen years to be leading tools in driving a market-based solution to improved social, economic and environmental production, using the power of consumer choice and globalizing supply chains to incentivize farmers and enterprises to improve their practices. . . . However, standards systems and their stakeholders recognise that even with impressive growth and impact, the scale of the challenges that we are collectively seeking to address means that we are unlikely to achieve the transformation we need with a model that recognises better practices at the scale of the individual farm or production unit [rather than at the landscape scale] (ISEAL Alliance 2016).*

## 9.5.2 The Certification Industry

Another aspect of a growing disappointment with the system concerns the conformity assessment segment of VSS, sometimes referred to as assurance schemes. Conceived as the linchpin of the standards model, auditing and certifying are needed to validate the whole operation. Independent third parties inspect a unit using a testing protocol and then pronounce in a pass or fail manner whether a production unit is conforming with the standard. But their image has been tarnished by a number of allegations of unfair pricing, cursory inspections, and, in some cases, corruption.

The power and influence the specialized services industry exerts has been a cause for complaint, as their activities are often no longer consistent with the founders' philosophy. Some of the largest certifiers dominate conformity assessment activities simply by their reputation,

and convince retailers to insist with producers and exporters to use their services. The reality is that often local consultants are used to perform the auditing in the producing countries. Using locally based experts is in most cases the best solution since they know conditions best. Even though such experts are often actually undertaking the verification, retailers refuse to take the “word” on verification directly from developing country-based firms (Rundgren 2015). In sum, the certification industry, including the accreditation business, which sets the norms and decides who may audit and certify, has been accused of abusing its market power and engaging in anticompetitive practices. Concentration and consolidation also increase the tendencies to cut corners and cheat. The informal trust building, which was formerly an integral characteristic of the organics sector, has often been replaced by paperwork and official licenses. This has led the governments of some countries—for example, Denmark and Finland—to take over inspection and certification. Others have intervened to set the level of fees for certification.

In the end, an assessment of VSS effectiveness depends on one’s perspective and the commodity in question (Halle 2014: 14–16). There are, however, some clear trends. Businesses are generally pleased in having found a management tool to reduce quality risks in supply chains and reputational risk to their firm. Consumers should in principle benefit from on-product logos to help guide them in buying sustainable products, however defined. And if occasionally consumers are victims of “greenwashing,” i.e., false claims about the environmental qualities of a product, they have recourse to consumer protection laws, at least in developed countries. At the ground level, actual environmental outcomes have been documented to a limited extent, as discussed above. This is a disappointment for environmental NGOs and donors in OECD countries who have poured millions into the development and operationalization of the schemes.

Developing country producers are frustrated in cases of compliant supply outstripping demand and subsequent withering of price premiums. Price differentials for sustainable commodities do not necessarily revert to the grower (Potts and Sanctuary 2010). Benefits are not evenly distributed along the supply chain, and certain actors can use their market power to bargain with suppliers and buyers to increase their share of the benefits. Certification costs are burdensome and limit access for smallholders, although progress has been made in the case of organics schemes, where group or regional certification schemes have opened access to smallholders.

Developing country governments have recently been able to bring their point of view to international organizations such as UNFSS, which

was founded in reaction to the concern that developing producers' voices were not being heard and to document the uncertainty on the schemes' market access effects. UNFSS is currently setting up national platforms on effective VSS use. A national platform in India was launched in April 2016, and the launching of such platforms in Brazil and the PRC is being planned.

For trade to strengthen its role in promoting VSS as a means toward sustainable outcomes in commodity production and fulfillment of SDG 15 targets, other challenges that need to be addressed include the following:

- (i) The more demanding and sophisticated the standards, the greater the tendency to limit sourcing to a relatively small number of better-off and well-managed producers benefiting from good infrastructure.
- (ii) VSS have not always been demand-driven; rather, donors and environmental and developmental NGOs have been primary advocates without sufficient developing country governmental and business support to national producers. The flip side is that such standards are not financially sustainable, and when donor support is discontinued they are likely to disappear.

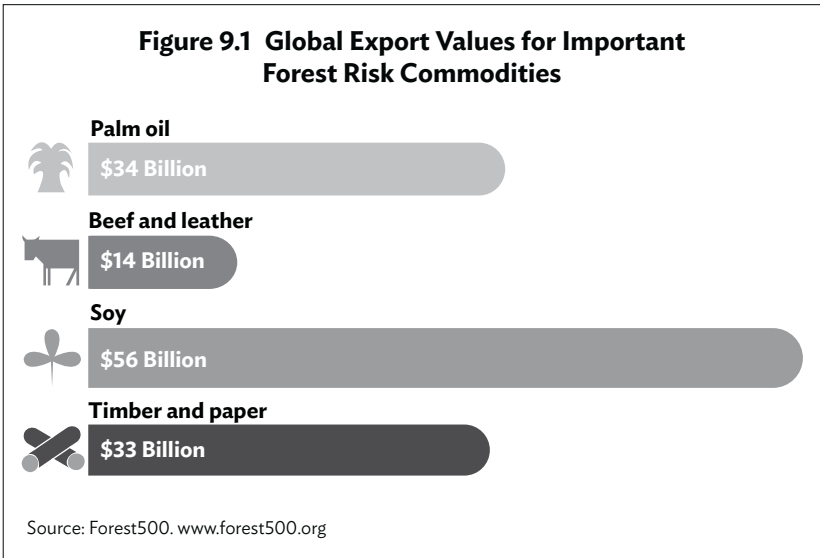
### **9.5.3 Other Voluntary Approaches Involving Trade in Natural Resources**

#### **Zero Deforestation Pledges**

Another private sector approach to linking exports of internationally traded commodities to the improvement of sustainable management practices has been the growth in zero or no deforestation pledges. Palm oil and soy have been the focus of international attention because the clearing of land in tropical areas in response to demand for these commodities is a driver of deforestation. Along with soy and palm oil, beef and wood fiber for paper and pulp for export are considered the top four drivers of deforestation.

The type and coverage of the zero deforestation pledges vary. Some are across-the-board no deforestation, some may be net pledges (clearings offset by plantings), while many are commodity-specific pledges (Bregman et al. 2015). In the Amazon region, the Working Group on Soy (GTS) of producers, traders, environmental NGOs (including the World Wildlife Federation and Greenpeace), and financiers worked out the Soy Moratorium. This initiative, which has been continuously renewed since its inception in 2006, prevents major traders who are signatories from selling soy that may be linked to deforestation.





Monitoring by the GTS in 73 municipalities that cover the quasi-totality of the area of soy produced in the Amazon is widely credited as a major factor in the reduction of deforestation in the Brazilian Amazon. In fact, this voluntary private-led initiative has been analyzed as outperforming the legally mandated Brazilian Forest Code.<sup>29</sup>

Nestlé had already announced a zero deforestation pledge in May 2010 and has followed through by ensuring its palm oil plantations in Indonesia are uniquely located on lands cleared before that date. The palm oil trading giant, Wilmar, made an anti-deforestation promise in 2013. Unilever and Marks & Spencer have made general deforestation commitments. The Amsterdam Declaration in Support of a Fully Sustainable Palm Oil Supply Chain by 2020 was signed by the governments of Germany, Netherlands, the United Kingdom, and Denmark to back a joint European company commitment to support 100% sustainable palm oil in Europe by 2020.

<sup>29</sup> Butler, R. 2015. Brazil's soy moratorium dramatically reduced Amazon deforestation. *Mongabay*. 23 January. <https://news.mongabay.com/2015/01/brazils-soy-moratorium-dramatically-reduced-amazon-deforestation/>. On the other hand, a high rate of conversion of the cerrado (savanna grasslands) to soy proceeded over this period. See Poynton, S. 2014. Wilmar's "no deforestation" goal could revolutionise food production. *The Guardian*. 29 January. <http://www.theguardian.com/sustainable-business/wilmar-no-deforestation-commitment-food-production>

ISEAL Alliance reports that the number of various kinds of such pledges has grown to some 300 (ISEAL Alliance 2016).

### Policy Coherence

The expression *policy coherence* does not appear under SDG 15. It can however be found under SDG 17, which is considered to be the overarching goal insofar as it sets out various means of implementation applying to all the SDGs. Target 17.14 reads: “enhance policy coherence for sustainable development.” This is usually understood to be a synonym for removing perverse incentives, among other things, for reducing funding to economic activities that go against recognized public policy goals. Targets under two other SDGs address subsidy reform directly, e.g., 14.6 *prohibiting certain forms of fish subsidies* and 12.c *rationalizing inefficient fossil fuel subsidies*.<sup>30</sup>

In a recent study (McFarland, Whitley, Kissinger 2015), the UK Overseas Development Institute identified 48 subsidies, and was able to estimate the value of half of them, revealing that reducing emissions from deforestation and forest degradation (REDD+) funding is eclipsed, specifically by domestic agriculture and biofuels subsidies. It is clear, they conclude, that REDD+ money to keep forests standing will not have much impact unless the real drivers of deforestation, including subsidies that lead to forest loss, are addressed. The authors call on donors and private investors to identify opportunities to phase out or reform current subsidies that encourage forest loss. The UN Environment Programme Financial Initiative has been working with three countries—Peru, Ecuador, and Indonesia—to understand how subsidies to agriculture are contributing to deforestation (UNEP 2015).

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<sup>30</sup> SDG 12.c: Rationalize inefficient **fossil-fuel subsidies** that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities.

SDG 14.6: By 2020, prohibit certain forms of **fisheries subsidies** which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.

## 9.6 Forests: Straddling the Certifiable and the (II)Legal

*15.b Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation*

Under SDG 15, forests are mentioned no fewer than four times, once in the text of overriding Goal 15 itself, then under two separate targets, 15.1 and 15.2, and finally in means of implementation 15.b. Why do forests occupy such a prominent place?

Classified into three groups—boreal, temperate, and tropical—forests englobe complex ecosystems with varied environmental, social, and economic attributes. Over 1 billion people depend on forest and non-timber forest products for their livelihoods (Chao 2012). Issues of national pride and sovereignty associated with forests mean that international discussions run up against strong sensitivities. These technical and political issues explain why it has never been possible to adopt an international convention on forests. They have, however, been the focus of numerous nonbinding international initiatives and texts. Although environmentalists pushed for an international convention, the document adopted at the Earth Summit at Rio in 1992 was a Statement of Forest Principles.<sup>31</sup> This was the first global consensus reached on the sustainable management of forests.

More recently, in the New York Declaration on Forests agreed at the UN Climate Summit in September 2014, companies, governments, NGOs, and indigenous groups endorsed ambitious targets of cutting forest loss and restoring degraded forests (Gulbrandsen and Fauchaud 2015). Among the trade-related measures were commitments to take steps to eliminate commodity-driven deforestation from their supply chains. Some of the commodity-specific zero deforestation pledges were discussed above in section 9.5.

With the adoption of the Paris Agreement at COP 21 in December 2015, forests have taken on even greater importance. Deforestation and forest degradation is the second leading contributor to global

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<sup>31</sup> The full name is the Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests.

warming, responsible for some 15% of global greenhouse gas emissions. This makes the loss and depletion of forests a major issue for climate change. Despite their importance in terms of greenhouse gas emissions, the role of forests had not been included in earlier UN Framework Convention on Climate Change texts. Their prominent place in the COP 21 Agreement has been heralded as a major step forward, as it recognizes not just the need to reduce emissions from deforestation and degradation, but also forests' major role in sequestering carbon and thus in contributing to the overall two-degree target.

Even if trade in timber is not explicitly mentioned in the COP 21 text, the links to trade are important. Forest-related emissions come largely from logging or clearing trees for agriculture, such as soy and palm oil, and cattle ranching, two-thirds of which are export-oriented. In the words of the Forest Carbon Partnership Facility, "With all the services that forests provide both to humanity and the natural world, there is now widespread understanding of a simple yet profound fact—that forests are more important left standing than cut."<sup>32</sup> The Paris Agreement calls for endorsement of policies that conserve standing forests and also sustainably manage forests and enhance carbon stocks.<sup>33</sup>

### 9.6.1 REDD+: Results-Based Payments

Although the acronym REDD+ itself doesn't appear in the Paris Agreement, the COP 21 text uses the exact definition of REDD+ both in Finance paragraph 55 and Article 5 on forests.<sup>34</sup> REDD+, standing for

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<sup>32</sup> Forest Carbon Partnership Facility (FCPF) (2010), p. 2. The FCPF is housed in the Carbon Finance Unit of the World Bank.

<sup>33</sup> Note that this mirrors the elements in SDG 15.2, the text of which is in the Annex below.

<sup>34</sup> Finance 55. Recognizes the importance of adequate and predictable financial resources, including for results-based payments, as appropriate, for the implementation of policy approaches and positive incentives for **reducing emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks**; as well as alternative policy approaches, such as joint mitigation and adaptation approaches for the integral and sustainable management of forests; while reaffirming the importance of non-carbon benefits associated with such approaches; encouraging the coordination of support from, inter alia, public and private, bilateral and multilateral sources, such as the Green Climate Fund, and alternative sources in accordance with relevant decisions by the Conference of the Parties; [emphasis added]

countries' efforts to "reduce emissions from deforestation and forest degradation, and foster conservation, sustainable management of forests, and enhancement of forest carbon stocks," was designed as a scheme based on rewards for results, also termed results-based payments. Beneficiaries are required to show that their forest conservation programs have reduced emissions before they receive funds. Originally, REDD+ was to rely mainly on voluntary carbon markets, but with the slow development of these markets and low-carbon prices, incentives were not strong to attract participants. Other sources of finance were necessary.<sup>35</sup> These have been forthcoming in the form of significant aid money from, e.g., Norway, other bilateral donors, and the World Bank's Forest Carbon Partnership Facility.

## 9.6.2 Certification of Voluntary Standards for Sustainable Timber

The Forestry Stewardship Council (FSC) was set up in 1993. The forest certification initiative had strong input from environmental NGOs. Originally a global standard setter, it now manages a series of national standards that adapt FSC international standards. It can be viewed as a "top down" approach. It works with national forestry agencies and accredits national certifying bodies. The FSC standard has a focus on the environmental pillar of sustainable development, i.e., sustainable forest management and biodiversity, genetically modified organism prohibition, and soil attributes. Set up in 1999, the Programme for the Endorsement of Forest Certification (PEFC), the other major certification scheme, is "bottom up" on the other hand. It works with national certification systems in 40 member countries and acts as a

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Article 5 1. Parties should take action to conserve and enhance, as appropriate, sinks and reservoirs of greenhouse gases as referred to in Article 4, paragraph 1(d), of the Convention, including forests.

2. Parties are encouraged to take action to implement and support, including through results-based payments, the existing framework as set out in related guidance and decisions already agreed under the Convention for: policy approaches and positive incentives for activities relating to **reducing emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks** in developing countries; and alternative policy approaches, such as joint mitigation and adaptation approaches for the integral and sustainable management of forests, while reaffirming the importance of incentivizing, as appropriate, non-carbon benefits associated with such approaches. [emphasis added]

<sup>35</sup> See Angelsen et al. (2012) for a detailed discussion of the technical, social, and political aspects of REDD+, including ramifications of its financing moving from carbon markets to donor money.

mutual recognition scheme. It also provides group certification to smallholders, which makes it attractive to small forest owners.

Both FSC and PEFC now have “due diligence” provisions including Chain of Custody certification that offer assurances that timber sold with the respective approval can be traced from the forest through successive stages of processing to the consumer. This is to minimize the risk that shipments include wood from unknown, illegal, and controversial sources. Due diligence and chain of custody certification have become important in view of the European Union Timber Regulation (EUTR) (see below) that now requires European timber importers to use a due diligence system. For actors all along the supply chain, this is a crucial risk management strategy. The FSC is a full member of the ISEAL Alliance.<sup>36</sup> The PEFC is an association member of the International Accreditation Forum.<sup>37</sup>

Between 9% and 10% of the total forest area of 4 billion hectares worldwide is certified by FSC and PEFC (combined). That certified area in fact represents closer to 30% of the productive forests, that is, excluding national parks and other protected areas. Some 90% of total certified hectares are of temperate and boreal forests—those located in North America or Europe. In terms of area certified by the FSC, Brazil and the Republic of Congo were among the top 10 countries in 2015. Under the PEFC scheme, the top 10 countries were all in North America and Europe; the PRC was number 11, and Malaysia number 12. Overall, tropical forests represent 10% of the area certified by the two bodies.<sup>38</sup>

### 9.6.3 Beyond Certification

Sustainability standards backed by certification have their share of critics. Various challenges are discussed above in section 9.5. As certification has become big business, it has, in the eyes of some critics, promoted a mentality of “ticking the box” rather than promoting deep transformations based on a holistic approach to ensure sustainable management of the natural resource. In part this is a manifestation of the natural progression of the “standards paradox” discussed earlier. As more and more of the

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<sup>36</sup> See ISEAL Alliance. Forest Stewardship Council Organisations. <http://www.isealalliance.org/online-community/organisations/forest-stewardship-council?page=2>

<sup>37</sup> See International Accreditation Forum. Association Members. [http://www.iaf.net/articles/Assoc\\_Mem\\_by\\_Name/128](http://www.iaf.net/articles/Assoc_Mem_by_Name/128)

<sup>38</sup> These statements are based on statistics provided by the PEFC; areas certified by both bodies continue to grow.

commodity becomes standard(s)-compliant, supply outstrips demand for the “green” variety, causing downward pressure on prices and reduction of the price premiums. In turn, sustainability investments are reduced and corners are cut, strengthening the tendency toward a “ticking of the boxes.” Even worse, cheating and corruption may occur. Certifiers who are known to be less stringent or can be bought off are called in. In such cases, trade loses its incentivizing role based on market-based instruments, as had been envisaged. No longer a driver for improved management practices, the standards-cum-certification model according to these critics is reduced to a race for the piece of paper.<sup>39</sup> Examples tend to be cited for organic agriculture and the VSS for heavily traded agricultural (non-timber) products.

Frustration with the process has had various consequences: some NGOs who were instrumental in originally developing standards have moved on, in some cases forming consultancies to work directly with the larger firms such as Unilever or Nestlé, with the objective of negotiating transformational change in the firm’s behavior (Greenpeace 2016). This may have been successful in the case of large firms that have made commitments at the highest level to these transformational changes to sustainable supply chains. Others have lobbied governments to step back into the business of regulating and setting stiffer standards. And some governments have taken over the certification business (Denmark and Finland in the case of organics).

#### 9.6.4 Legislating against Illegal Logging and Illicit Trade

Global exports of timber and forest products in 2013 were valued by the Food and Agriculture Organization (FAO) and the UN Economic Commission for Europe at \$246 billion. The UN Environment Programme has put a price tag on illegal logging and forest crime at between \$30 billion and \$100 billion a year, and estimates that in certain countries, 50%–90% of the wood is harvested or traded illegally.

In the absence of international regulation of the timber trade,<sup>40</sup> key timber-consuming countries have in recent years passed legislation to

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<sup>39</sup> Poynton (2015) describes in passionate terms how many standards plus certification schemes have in his view gone wrong. He advocates an alternative model based on values, transparency, transformation, and verification. LeBaron and Lister (2016) have similar criticisms. They found that audits come down to fostering a “checklist” audit compliance mentality and are ineffective tools for detecting, reporting, or correcting environmental and labor problems in supply chains.

<sup>40</sup> The number of listed species of timber has increased from 18 at CITES’ beginnings in 1975 to a few hundred after COP 16 held in 2013. Decisions taken at COP 17 in September 2016 added stricter provisions for certain species of timber, particularly rosewoods. See International Centre for Trade and Sustainable Development, 2016.

prohibit the import of illegally harvested or transshipped timber.<sup>41</sup> The EUTR, the US Lacey Act, and the Australian Illegal Logging Prohibition Regulation (Schloenhardt 2008) all take roughly similar approaches to combating imports of illegal timber.

The EUTR went into effect on 3 March 2013. Its three main obligations are to (i) require EU traders who place timber products on the EU market for the first time to exercise due diligence to ensure that timber products marketed are legitimate; (ii) prohibit European importers from placing illegally harvested timber or their products on the EU market; and (iii) ensure that economic operators have a traceability obligation, that is, they maintain records of their suppliers and customers (European Commission 2016b).

Under the US Lacey Act, trade is prohibited in wood products manufactured from illegally harvested and traded timber. Infractions are punishable with heavy fines. The US has also worked to include provisions on illegal logging in bilateral and regional trade agreements. Currently, the US government is cooperating with Peru to implement obligations in the forest sector annex to the US–Peru Trade Promotion Agreement.<sup>42</sup>

### 9.6.5 Legal Reform in Producing and Exporting Countries

The EU Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan, adopted in 2003, focuses on negotiating Voluntary Partnership Agreements (VPAs) with the twofold aim of addressing legality and sustainability in the timber sector. A VPA is a legally binding trade agreement between the EU and a non-EU timber-producing country. To date, six VPAs have been signed and another nine are being negotiated, mostly with African and Southeast Asian countries. Since 2003, and despite the six VPAs currently in place, no shipment of “green lane” timber to the EU had been made as of mid-2016.

Criticism of FLEGT has been strong due to slow progress and its heavy procedural aspects. The EU and FAO, offering technical assistance to the VPA talks, explain that long negotiations stem from the revamping of the producing country’s legal system and the concomitant need for strengthening government agencies’ capacity—issues that go to the heart of national governance, including issues of fighting corruption. Indonesia and Viet Nam have to address the further problem of closing

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<sup>41</sup> See WTO Committee on Trade and Environment Records in 2014 and 2015: WT/CTE/M/57, 58 and 59.

<sup>42</sup> US–Peru Trade Promotion Agreement. Annex 18.3.4: Annex on Forest Sector Governance. [https://ustr.gov/sites/default/files/uploads/agreements/fta/peru/asset\\_upload\\_file953\\_9541.pdf](https://ustr.gov/sites/default/files/uploads/agreements/fta/peru/asset_upload_file953_9541.pdf)



the loophole of timber transiting from illegally logged sources elsewhere in the region to EU destinations to meet compliance with the EUTR. The political and technical dialogues are bringing reform, but slowly.

An in-depth independent evaluation of FLEGT and the VPAs was released in early May 2016. It finds that FLEGT has contributed to improved forest governance and reduced demand for illegal timber in the EU. The three pillars of FLEGT are to work along with (i) the supply-side in producer countries (governance reforms and licensing); (ii) the demand-side in consumer countries (public procurement policies, private sector initiatives, and finance and investment safeguards); and (iii) trade agreements—to link and incentivize (i) and (ii). The VPAs have helped countries address governance issues, increase participation and transparency, and start legislative reforms. FLEGT licenses are required to export legal timber into the EU. As none have been issued so far, the incentivization from trade has been lacking according to the independent evaluation (European Commission 2016a).

Additional challenges to be addressed include the importance of other drivers of deforestation, such as conversion of forest to agriculture, that are not always tied to exports of timber. The in-depth evaluation makes a number of recommendations, such as involving the private sector more; focusing on non-VPA countries in order to effectively address illegal logging and trade at the global level; and adding obligations arising from international initiatives, such as climate change. In the latter context, the need to develop relations with REDD+ was underscored.

### **9.6.6 Synergies between Certification and Illegal Logging Laws**

Increasingly, it is being recognized that the two approaches—regulatory and voluntary—have the potential to create synergies. “Due diligence” is now required by both certification systems—FSC and PEFC—within their chain of custody requirements. This is an ongoing process, not a one-off prerequisite, and can help reassure traders that they may be in compliance with the EUTR when operating within the EU market. Investigation into the legal regime and origin of the timber therefore becomes part of a risk management strategy for the importer who would otherwise face potential sanctions under EU legislation. Synergies are also created by using the practical experience of certification standards such as the FSC in implementing traceability schemes that are useful in legal reform in VPA countries.

Synergies can also be imagined from the practical experience of undertaking in-depth audits to meet the standards in implementing

traceability schemes. These are essential in reforming timber legislation in VPA or other producing countries. The voluntary certification schemes that have been operational for many years now are fulfilling the requirements of consumer countries' promotion of trade in legally harvested and shipped timber.

## 9.7 Moving Forward to Strengthen Trade-Related Initiatives for Sustainable Use

As discussed above, voluntary initiatives have been successful when measured by market penetration. This dynamism using a market-based instrument has not carried through to the satisfaction of all stakeholders. Frustration exists at certain levels—producers, NGOs, developing country governments, and consumers, but not everyone. Business has learned to adapt the VSS-cum-certification model by moving away from a simple expression of corporate social responsibility to make it one component in a multifaceted business model. Businesses have successfully integrated it in their risk management strategies throughout the supply chain to protect reputational and other assets.

Currently there are discussions about how to revitalize the VSS-cum-certification model. Research leaders in the standards world are calling for innovation to address weak points and expand sustainability standards to support landscape approaches (Molenaar 2015). The change in direction is anchored by solid experience with the past.<sup>43</sup> Instead of working plot by plot or at farm or mill level, an entire area would be monitored. The task would be facilitated with mapping and satellite technology to determine sustainability at a meta level. Instead of a detailed pass or fail type audit on the ground, verification would examine progress made in accordance with a more far-reaching management system. Governments would make a reappearance, usually at the local or regional level (ISEAL Alliance 2016).

The big question remains about financial incentives, that is, how to incentivize producers to adopt and maintain more sustainable practices (OECD 2013). From an agricultural point of view, this traditionally means productivity gains and diversification. Will the consumer accept buying the “green” good simply based on claims that landscape management systems have been “verified”? Will they accept a system based on “things are getting better,” rather than commodity

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<sup>43</sup> Forest management certification systems based on ISO 17021 use monitoring to expand certification and include smallholders.

production units that are audited according to strict testing protocols as done previously? And what happens to the smallholder? How could a new system involve more competitive market safeguards or government intervention to limit anticompetitive practices by certain certification firms?

The voluntary zero deforestation pledges would on the surface appear to fit well with the objective of maintaining and restoring forests through REDD+. Further commitments from timber-producing countries under the Nationally Designated Commitments, adopted under the COP 21 agreement on climate change to protect and restore forests, will need to be matched with financial incentives. Learning from the past slow uptake, the results-based-payments approach needs to be strengthened. Policy coherence (eliminating perverse subsidies) could be a helpful complement, but it is easier to espouse than realize. Years of hard work on fossil fuel subsidy reform has now led to peer reviews for a few G20 and Asia-Pacific Economic Cooperation countries.

Any revisions in voluntary approaches will still necessarily need a conformity assessment or assurance component. Consumers, donors, environmental watchdogs, and others must be reassured, and validation of the risk management strategies of business must be allowed. But processes that encourage a one-dimensional compliance or a checklist mentality need to be avoided. Lessons need to be drawn also to ensure that the certification industry no longer engages in anticompetitive practices. Governments that have the competition policy tools to intervene and correct imbalances should investigate allegations.

Tools to support a sustainable use and sustainable trade approach have been developed including under CITES since the CBD was born at the Earth Summit in 1992. A number of success stories have been inspired by CITES-type mechanisms. At the same time, these programs remain comparatively small relative to trade in the big international commodities such as palm oil, soy, beef, and forest products. UNCTAD's launching of an initiative to mainstream support into BioTrade in bilateral and multilateral donor programs is welcome. But can this be expected to remain more than marginal?

A further complication pertains to environmental crime. Due to links to organized crime and terrorist organizations in certain regions and for certain products, trade in nature-based goods has once again become suspect. Therefore, increased support for sustainable use and sustainable trade will need to prove itself, not only to environmental groups, but also to law enforcement authorities. Organized crime is using helicopters and Kalashnikovs, and is ahead of the curve in using information technology and globalized transport routes. Meanwhile, enforcement agencies are struggling to increase their resources. Legal,

nature-based trade will have to prove itself to be “whiter than white,” and emerging techniques such as e-permitting, tagging, and other traceability systems need to be generalized.

Perhaps the truly herculean effort will be on the forests front. On the one hand, there is the continued need to facilitate the \$100+ billion legal trade through certification, including chain of custody processes together with the reform of logging laws. On the other hand, REDD+ has to be incentivized to let trees stand and play their role as carbon sinks.<sup>44</sup> REDD+ was given a new lease on life at COP 21. It has a long way to go to catch up as the various certification schemes are forging ahead and sustainable timber areas being certified by double-digit growth figures. The debate will continue between keeping a tree standing to play its role in sequestering carbon and selling it as timber. Actors will need to be convinced that the timber traded originates from legal sources and sustainably managed stands.

In view of the challenges voluntary and mandatory schemes have been facing, it is an opportune time to be innovative. Indeed, as discussed above, voluntary standards leaders are already thinking in terms of expanding their horizons beyond the farmer’s plot to promote sustainability schemes for entire landscapes.

### 9.7.1 Trade Facilitation Agreement for Environmentally Sensitive Goods and Relevant Services

*What could be a possible role for a Trade Facilitation Agreement (TFA) for environmentally sensitive goods and relevant services?* The idea has a firm precedent in the TFA agreed at the World Trade Organization (WTO) Ministerial Conference in Bali in 2012.<sup>45</sup> Such an agreement would be “intergovernmental plus,” that is, with significant participation from local communities, NGOs, and business. It is important to distinguish the notions of *promoting* trade and *facilitating* it. The aim of the WTO TFA is to “expedite the movement, release and clearance of goods, including goods in transit”—i.e., that part of trade after exporter and importer have concluded the business deal (Rosenow 2015; OECD 2015). For example, as CITES-permitting and related wildlife laws are relatively complex, using TFA-type techniques could help *facilitate* the process. Components for consideration inspired by the current TFA would address the following:

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<sup>44</sup> See Sukhdev (2015) for ideas on promoting synergies.

<sup>45</sup> The TFA entered into force on 22 February 2017 after the WTO obtained the needed acceptance from 110 members.

- *Border procedures to accelerate movement through customs.* The techniques of the single-window system, electronic permits, data authentication, tracking and traceability systems, etc. would simplify procedures and cut down corruption.
- *Cooperation among government agencies involved.* Today they too often are operating as separate units. Thus, trade, customs (including inspection and criminal units), and wildlife officials (such as CITES management authorities) would be required to work together.
- *Regulatory cooperation on trade in relevant services.* These services, which facilitate the movement of goods, including transport (international and domestic), logistics, and customs brokers, would also figure prominently.
- *Strong role for technical assistance agencies and other bilateral and multilateral donors.* As with the WTO TFA, developing countries would only be subject to the disciplines when they declared themselves ready to accept them.

Under a separate window of the proposed agreement, VSS could be kept under review by a loose, arms-length coalition of select stakeholders—governments of producing and consuming countries, the private sector, NGOs, traders, and certifiers. The GTS (Working Group on Soy) is an example of a multi-stakeholder process that has succeeded in stopping deforestation through a voluntary and negotiated process. In this case, the “return of governments” to the game would validate the process.

The lessons of 20 years of voluntary standards show that it is not a question of either/or, but of benefiting from both an active private and governmental presence. As stated in a recent discussion piece of private standards and the WTO: “Reification of the old-fashioned distinction between public and private ordering fails to address the realities of 21st century governance” (Mavroidis and Wolfe 2016).

Reuniting suspicious actors will not be easy. Witness the difficulties the EU is having with FLEGT to promote timber sector reform through VPAs, despite the tremendously attractive carrot for producers of opening a “green lane” procedure into the EU market. Pride of authorship by certain large NGOs who wrote and are operating many of the sustainability standards for internationally traded commodities will not necessarily be in favor of increasing government involvement. Will the large corporations that are already out in front want to lose a first-mover advantage?

For the idea to move forward, a testing ground could prove useful between sympathetic trading partners. Such an opportunity might

take the form of a regional trade agreement<sup>46</sup> between two natural resource-dependent economies that understand the crucial importance of maintaining the future sustainability of their resource base while providing nature-generated revenues for current generations. This should be an idea worth pursuing to strengthen the positive accomplishments of both voluntary standards and more than 40 years of international experience in regulating wildlife trade.

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<sup>46</sup> Provisions about VSS in RTAs are relatively recent: Article 3.2(g) of the sustainable development chapter in the Canada–EU Comprehensive Economic and Trade Agreement provides, “*Encouraging the development and use of voluntary schemes relating to the sustainable production of goods and services, such as eco-labelling and fair trade schemes.*”

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## Appendix

### Sustainable Development Goal 15 and the 12 Targets

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements

15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally

15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world

15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development

15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species

15.6 Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed

15.7 Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products

15.8 By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species

15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts

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15.a Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems

15.b Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation

15.c Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities

# 10

## Trade and Climate Change

*Andrew Prag*

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### 10.1 Introduction

Sustainable Development Goal (SDG) 13 addresses climate change mitigation and adaptation, but explicitly “acknowledg[es] that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum for negotiating the global response to climate change.”

It is, however, less detailed than many of the other SDGs, and is noticeably brief on issues around reduction of greenhouse gas (GHG) emissions. This is understandable, given that the SDGs were developed at the same time as countries were negotiating a new international agreement on climate change. Now that the Paris Agreement on climate change has been finalized, SDG 13 can be seen as rather subservient to the strong commitments made in that agreement on both mitigation and adaptation, as well as the subsequent transparency and review processes.

Nevertheless, it is valuable to consider how trade and trade liberalization policies may help or hinder action on climate change, including achievement of SDG 13. The substance of this chapter is based on two chapters of a major 2015 study, *Aligning Policies for a Low-Carbon Economy* (OECD–IEA–NEA–ITF 2015). That study recognizes that climate change policies do not operate in isolation and that other policy areas can strongly influence whether climate objectives are achieved, and at what overall cost. The report provides a broad diagnosis of how various policy measures and regulations may be misaligned and negatively interacting with climate change policies. The misalignment approach is also reflected in SDG 13 through the second of the three targets: “Integrate climate change measures into national policies, strategies and planning.” Alignment and interaction of policies is therefore a useful lens through which to address the role of trade in achieving SDG 13.

## 10.2 Trade and Greenhouse Gas Emissions

International trade influences global GHG emission patterns in several ways. The environmental impacts of trade have often been framed in terms of their scale, composition, and technique effects (Grossman and Krueger 1993; Copeland and Taylor 2003). When applied to GHGs, the scale effect refers to changes due to the increased activity from trade—including increased transport—which usually leads to increased emissions. The composition effect refers to changes in a country's emissions profile as relative prices and resource allocation between sectors adjust in response to international trade. As trade increases, some sectors will expand and others will contract in line with a country's comparative advantage, which could lead to either an increase or decrease in its overall emissions intensity, all else constant. The technique effect refers to improvements in emissions intensity due to production innovations, such as through the international diffusion of lower-carbon goods and services via trade. Policy settings can influence how trade, through these three effects, influences GHG emissions.

International trade also acts to move “virtual emissions” around the world, “embedded” in traded products. Usually, GHG emissions are attributed to countries on a territorial production basis, so that all emissions physically released within a country's borders count toward that country's inventory. However, emissions generated in the production of exported goods (or intermediate products) will essentially be “consumed” in another country. This presents a challenge for emissions accounting. If national emissions were instead to be calculated on a consumption basis, i.e., including estimates of emissions released during the production of imported goods consumed within the territory, this would paint a different picture, though it is technically challenging (Box 10.1).

Another means by which trade influences GHG emissions is as a vector for “carbon leakage.” The interconnectedness of the global economy through trade means that countries' core climate policies do not operate in isolation. Short-term costs imposed by climate policies could lead to “carbon leakage” in cases where imports of carbon-intensive goods increase in response to more stringent mitigation efforts. Energy-intensive firms in many countries remain concerned that if domestic climate-related regulation is misaligned with the stringency of regulation in other countries, this will harm competitiveness at the firm and sector level and could lead to industrial flight to countries with less stringent climate regulation. This could be either through altered balance-of-trade flows or through relocation of production capacity.

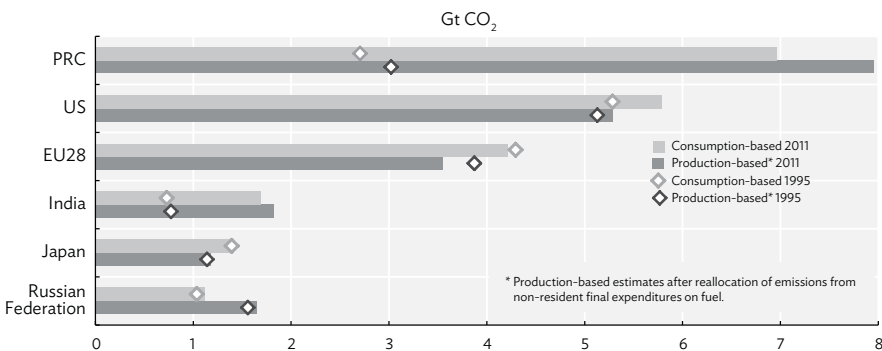


**Box 10.1 Traded Emissions: Calculating Emissions Based on Production and Consumption**

A comparison of countries’ production and consumption emissions can be visualized using data from the Organisation for Economic Co-operation and Development (OECD)’s input-output tables combined with International Energy Agency (IEA) data on carbon dioxide emissions. Intellectually, it might appear more appropriate to consider consumption-based emissions when assessing countries’ efforts to reduce greenhouse gas (GHG) emissions. If perfect information were available, it would be interesting to determine how a global carbon budget could be carved up based on the real emissions influenced by the consumption in each country. This would in theory remove any concerns about “carbon leakage” (see below) and would allow each country to take responsibility for the emissions its economic activity really generates. In practice, at least two issues need to be considered.

First, even though it can be claimed that a country is responsible for the emissions along global production chains generated by its economic activity, that country’s capacity to influence emissions intensity abroad is limited. This is where an international agreement on territorial emissions continues to play an important role. Second, all GHG data are far from perfect, and agreeing on methods for measuring and comparing consumption-based emissions remains challenging (Lenzen et al. 2013; Nakano et al. 2009; Peters et al. 2011). Nevertheless, estimates such as those presented in the figure below provide a useful illustration of the importance of international trade for GHG emissions allocation. The data resemble those presented for net export and import by region in the Intergovernmental Panel on Climate Change’s Fifth Assessment Report (Agrawala et al. 2014).

**Figure 10.1 GHG Emissions of Selected Countries on a Production and Consumption Basis**



EU = European Union, GHG = greenhouse gas, PRC = People’s Republic of China, US = United States. Source: Authors based on Organisation for Economic Co-operation and Development input-output tables and International Energy Agency carbon dioxide emissions data. See [www.oecd.org/sti/inputoutput/co2](http://www.oecd.org/sti/inputoutput/co2)

Emissions reduction efforts would also be undermined, as part of the avoided emissions would now occur somewhere else. This potential carbon leakage to “pollution havens” has been much discussed in the literature (for examples, see Condon and Ignaciuk 2013; Arlinghaus 2015).

So far, there is not much evidence that climate policies have led to carbon leakage. A recent review of empirical studies found very little evidence of sector-level competitiveness effects arising from carbon pricing systems implemented to date (Arlinghaus 2015). While the literature is in broad agreement that the European Union (EU) Emissions Trading System (ETS) has stimulated some emissions abatement, no causal link could be established between carbon pricing—including the EU ETS and a range of carbon taxes—and carbon leakage. For carbon taxes, while abatement through decreases in energy intensity was found, only very small impacts on competitiveness were identified (Arlinghaus 2015). Further, no causal effects of the system on employment, output, or international trade have been found; observed employment decreases are more likely due to the financial crisis and the decades-long gradual shift away from manufacturing in OECD countries (Warwick 2013; Pilat et al. 2006).

Further, the evolution of domestic energy prices will also influence the industrial competitiveness landscape (IEA 2013; Flues and Lutz 2015). The cost of climate policy is one of many factors in this picture: energy costs, labor costs, exchange rates, transport costs, product specialization, and local demand markets and regulations are important determinants of industrial competitiveness (IEA 2013; ECF 2014).

The absence of competitiveness effect evidence to date can, however, be challenged on the grounds that future emissions reductions will need to be much higher than implemented so far, with higher costs and possible trade distortions as a result. This, of course, hinges on the relative ambition of climate policies in different countries, including how the Nationally Determined Contributions (NDCs) are implemented and how they evolve. NDCs are national mitigation plans for the post-2020 period, submitted to the Paris Agreement. While not explicit on trade, the Agreement contains a transparency and ambition mechanism designed to increase trust between countries on the relative ambition of their actions (Box 10.2).

Despite these various emissions pattern influences, trade itself is not the climate villain. International trade does of course have direct emissions implications due to GHG emissions from transport (as well as other direct environmental impacts, such as invasive species in containers and ballast water). But when the life-cycle emissions of goods are considered, a different picture may emerge. Comparing

life-cycle emissions means looking at the GHGs produced at all stages of a product's life, such as production, transport, end use, and disposal. If the production process in another country is much less emissions-intensive than in the country where the good is to be consumed, then overseas production may still have lower emissions, despite those from international transport. How a product is produced is often more important than where it is produced. This can be an important factor where policies are designed to favor local production over imported products on environmental grounds.

Further, the principles of free trade and comparative advantage suggest that over the long term, free and fair trade should lead to a more efficient (and resource-efficient) outcome for the same level of economic output, assuming that climate-related externalities are correctly priced everywhere. In 2050, feeding 9 billion people all striving for wealthier lifestyles will be less resource-intensive with free trade than it would be without it, again assuming that GHG externalities are correctly priced.

The problem is that not all GHG emissions are yet correctly priced. This means that it is important to assess how international trade is likely to affect global GHGs, and where policy misalignments could lead to higher emissions.

The rest of this chapter examines how trade policies may be misaligned with countries' objectives on climate change. First, it looks for misalignments within international trade agreements and trade

### **Box 10.2 Trade and the Paris Agreement**

The conclusion of the Paris Agreement in 2015 is a landmark in international cooperation on climate change. The hybrid nature of the agreement—a universal commitment to limit warming accompanied by country-determined action plans—allows for countries to steadily increase their ambition while subject to an international transparency and review process. Interestingly, the word “trade” is not mentioned in either the Paris Agreement or the accompanying technical decision by the Conference of the Parties. The underlying text in the original Framework Convention on Climate Change (agreed in 1992) can be assumed still to hold: “Measures taken to combat climate change, including unilateral ones, should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade.” This mirrors the principles in international trade law discussed below, although the World Trade Organization agreements do not include any specific mention of climate change. The bottom-up nature of country commitments made under the Paris Agreement makes it ever more important that international trade law does not act to prohibit governments in pursuing legislation aimed at achieving ambitious climate goals.

Source: Author.

rules themselves. It then focuses on where domestic policies, including those intended to foster green growth, may be hindering the diffusion of low-carbon goods through international trade. Finally, the role of policy in improving trading system resilience in the face of physical climate impacts is briefly considered.

## 10.3 Potential Misalignments with International Trade Rules

The international trade regime includes rules agreed multilaterally under the World Trade Organization (WTO), rules agreed bilaterally or plurilaterally through regional trade agreements (RTAs), and jurisprudence from prior disputes relating to trade rules. Taken as a whole, does the trade regime act to restrict governments' ability to pursue ambitious climate policies? The following sections suggest that, in general, the trade regime is not in itself misaligned with climate objectives.

### Multilateral Agreements under the World Trade Organization

The WTO's primary agreement governing goods trade, the General Agreement on Tariffs and Trade (GATT) 1994, does not in itself prevent countries from pursuing climate policies. The GATT lays out the core principles for free trade. Key among these are the principles of nondiscrimination between "like products" from different trading partners (most-favored-nation treatment) and between "like products" of foreign and domestic origin (national treatment). The question of whether products that differ only in the way they are produced, such as differences in GHG emissions during production, should be considered "like products" has been extensively debated by commentators and in ongoing WTO case law.

However, the GATT also allows for countries to justify policies on environmental (and other) grounds through Article XX, even if the measures partly violate one or more of the core principles.<sup>1</sup> Although the

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<sup>1</sup> If a policy measure related to climate change mitigation seeks exemption from goods trade rules as a necessary measure for the low-carbon transition, the measure must satisfy the content of one of the paragraphs of Article XX. In most environmental cases, this means the measure must be "relating to the conservation of exhaustible natural resources" or be "necessary to protect human, animal or plant life or health." The measure seeking exemption must also satisfy the chapeau of the article, that is, not to constitute an "arbitrary or unjustifiable discrimination between countries where the same conditions prevail" or a "disguised restriction on international trade."

exemptions do not specifically mention climate change (the text dates from 1947), there is no clear evidence that the GATT itself has acted to discourage countries from pursuing policies relating to climate change. In the few instances that WTO case law has tested whether climate change is an appropriate reason for justification under Article XX, opinions have generally been favorable (Tran 2010).

Several of the more specific WTO agreements are also relevant to policies and measures targeting climate change objectives. One particular example is the Agreement on Subsidies and Countervailing Measures (SCM). Subsidies for the deployment of low-emitting technology have been one of the few policy tools readily available for governments seeking to take fast action on the low-carbon transition, given the barriers often faced when seeking to implement carbon pricing systems.

In general, the WTO Dispute Settlement Mechanism has allowed for jurisprudence to build up on an as-needed basis, with the application of trade rules to particular cases being clarified through emerging case law, including for measures related to climate change. In the case of subsidies, the dispute settlement process can lead to authorized, unilateral trade remedies adopted by WTO members. Remedies such as antidumping and countervailing duties are legitimate, WTO-sanctioned responses to injuriously dumped or subsidized imports.<sup>2</sup> Recently, unilateral remedies have been applied in two directions within the same low-carbon industry. For example, the United States (US) first imposed antidumping and countervailing duties on finished solar panels from the People's Republic of China (PRC). In response, the PRC imposed similar measures on polysilicon precursors from the US. The result of this escalation is reduced overall trade and increased costs in the supply chain (see review of studies in OECD 2015). Although policy options for de-escalating trade remedies exist,<sup>3</sup> the costs incurred all across value chains and the uncertainty created for investors reinforce the importance of

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<sup>2</sup> For countervailing duties, the implementing party must demonstrate that “specific” subsidies were provided that caused “injury” to the domestic complaining industry before countervailing duties can be imposed. Export subsidies and local content subsidies, which are generally prohibited, are deemed specific. Other subsidies, it must be shown to be limited to a specific company or industry, or group of companies or industries. Subsidies that are not prohibited, are not specific, or do not cause injury are permissible under WTO rules.

<sup>3</sup> These include reductions in the level of the duty imposed (not seeking to counter the full value of the dumping), reducing the scope (e.g., to the specific product or import value) or targeting only companies with a dominant anticompetitive market position (Wu and Salzman 2014; Swedish National Board of Trade 2013).

ensuring that domestic subsidies are designed in accordance with WTO principles, including the SCM.

## **Regional Trade Agreements**

Outside of the WTO, governments have for many years pursued bilateral or plurilateral trade and investment agreements, often with the aim of creating closer ties with trade partners or moving toward deeper regional economic integration. Increasingly, these RTAs include specific environmental provisions (or environmental side agreements) that can be used to encourage more stringent environmental action (OECD 2007; George 2014). For example, provisions can include agreements to not weaken environmental laws to seek increased international investment, and agreements to ensure that judicial enforcement is available (e.g., the Peru–US agreement and the agreement between the Central American countries, the Dominican Republic, and the US; see US GAO 2014 for a review). The effectiveness of these provisions depends on their degree of ambition, the extent to which they are binding, the stringency of their enforcement, and the nature and extent of cooperation between or among the parties to implement the provisions.

More recent RTAs aim to tackle behind-the-border barriers to trade in a more profound way than the WTO's Agreement on Technical Barriers to Trade. As well as chapters related to the environment or sustainable development, these RTAs tend to include provisions on regulatory cooperation aiming to streamline regulations to reduce the cost of doing business internationally. Although this cooperation may cover environmental regulations, including those relevant to climate change mitigation, it does not impede each party's sovereign right to regulate. Concerns have also been raised that investor protection clauses, if included in RTAs where all parties have robust domestic investor protection laws, the outcome could be detrimental to climate change policy measures (if international investors use that facility to challenge domestic climate policies). However, investor protection clauses have been used in international agreements for many years and no conclusive evidence of this effect has been documented (Australian Productivity Commission 2010; Tietje et al. 2014; BIAC 2015).

## **Environmental Goods Trade Liberalization**

Increased trade in environmental goods can help to mitigate environmental problems while also supporting economic growth. Most OECD countries have, over time, reduced their import tariffs

for environmental goods, including those relevant to climate change mitigation. However, formal tariff-based trade barriers still exist for environmental goods, in particular outside the OECD area, with the result that the diffusion of some technologies important for addressing GHG emissions is hindered and costs in those countries are higher than they should be.

The prospect of a multilateral agreement at the WTO with commitments on environmental goods tariffs has been discussed many times since 2001, so far with little progress in formal negotiations (Steenblik 2005; Sauvage 2014). Progress has been made outside of the WTO on a plurilateral basis. The Asia-Pacific Economic Cooperation (APEC) countries took a leading role in environmental goods trade by agreeing on the APEC List of Environmental Goods and committing to reduce applied tariff rates of the listed products to 5% or less by the end of 2015. In 2014, a group of WTO members, including OECD and non-OECD countries (among them the PRC), commenced new plurilateral negotiations toward an Environmental Goods Agreement that is likely to include goods that are important for climate change mitigation (or are components thereof). If concluded successfully, such an agreement could potentially be formalized under the WTO in due course. Technical challenges remain, including reaching agreement on which goods should be considered for tariff liberalization, given that many goods also have clearly non-environmental uses and are not separately identified in the Harmonized System, the international classification and coding system used to track international trade (Steenblik 2005; Sauvage 2014).

Nontariff barriers (NTBs) also hinder environmental goods dissemination, sometimes to a larger extent than tariff barriers. These include, for example, burdensome customs procedures, testing and certification requirements, and local-content requirements (LCRs), such as those described under the domestic measures section below. Although the current negotiations on trade in environmental goods cover only tariffs and not NTBs, successful conclusion of an agreement on reducing tariffs for environmental goods would potentially pave the way for a future agreement extending to NTBs.

## **10.4 Misalignments Arising Through Domestic Policies Related to Trade**

Within the framework of the international trade regime, the trade effects of some domestic policies can have an important bearing on

their effectiveness to support the low-carbon transition. These policies are examined in this section.

### **“Local-Content Requirements” for Renewable Energy**

As part of their recovery from the financial crisis, many countries have implemented various forms of industrial policy, albeit often under different names (Evenett et al. 2009; Warwick 2013).

A number of these newly introduced policies aim to promote green growth through the stimulation or creation of domestic industries manufacturing low-carbon power generation equipment. This trend has been referred to as the rise of “green industrial policy” (e.g., Wu and Salzman 2014; Rodrik 2013). Such measures may initially appear to be beneficial for the low-carbon transition. But various analyses have highlighted that if the measures are designed to be overly restrictive of international trade, they are likely to lead to higher prices for both domestic and international suppliers, with the overall effect of hindering uptake.

Box 10.3 considers the specific and highly visible example of LCRs for renewable energy equipment. These can be considered a policy misalignment for the low-carbon transition because they can raise the overall costs of downstream activities (e.g., installation). OECD work indicates that LCRs have hindered both competitiveness and international investment in solar photovoltaics and wind energy. The increasingly globalized nature of value chains for wind and solar technology means that intermediate products cross borders many times. LCRs are usually intended to support midstream manufacturers, and the resulting market distortions can increase costs for actors further down the value chain. If these actors are in the same country, the policy may have a net negative effect for the domestic sector it is trying to support. Overall, such policies are likely to raise costs all across the production chain (Bahar et al. 2013; OECD 2015).

The risk of higher overall costs also exists in relation to other trade-impacting “behind the border” measures in the same sectors. These include measures with more direct trade implications (such as local-equity requirements and export quotas), and those that deter international investment and therefore lead to overall less-efficient supply chains (e.g., national standards that favor domestic producers or more informal measures that favor local enterprises over foreign ones). The prevalence of these measures, and the WTO disputes associated with them, highlights the need for policy makers to better align and take a more holistic approach to trade and investment policies in order to support the low-carbon transition.



### **Box 10.3 Local-Content Requirements in Renewable Energy Markets**

Local-content requirements (LCRs) have increasingly been used to support renewable energy. Organisation for Economic Co-operation and Development (OECD) research shows that LCRs linked to wind and solar photovoltaics have been planned or implemented in at least 21 countries, including 16 OECD countries, mostly since 2009. LCRs are typically imposed as a precondition for access to financial support schemes such as feed-in tariff (FiT) programs or as part of eligibility requirements in renewable energy public tenders. Some countries have also designed LCRs as eligibility criteria for direct financial transfers such as subsidized loans and loan guarantees from government agencies and national development banks, as in Brazil. In some cases, such as in India, different LCR ratios are used depending on the technology in downstream installations (OECD 2015; OECD et al. 2013; Bahar et al. 2013).

To highlight the effects of LCRs on international investment, OECD empirical analysis indicates that while FiT policies play an important role in attracting international investment in solar photovoltaics and wind energy, LCRs have a detrimental effect on global international investment flows in these sectors and hinder FiT policies when attached to them. The estimated detrimental effect of LCRs is slightly stronger when both domestic and international investments are considered. This indicates that LCRs do not have positive impacts on domestic investment flows (OECD 2015). At the same time, recent OECD Computable General Equilibrium modeling has shown an array of expected negative impacts of LCRs on trade across different sectors (Stone et al. 2015).

The rise of LCRs for renewable energy has led to at least five WTO disputes since 2010, highlighting the importance that governments place on new renewable energy industries. The most recent high-profile example concerned the National Solar Mission in India.

The Jawaharlal Nehru National Solar Mission, launched in 2009, uses a competitive bidding process for new solar power tenders. The mission is planned over three phases from 2012 to 2022, with the original aim of 20 gigawatts (GW) of on-grid capacity and 2 GW of off-grid solar installations. In 2015, this target was increased to 100 GW.

Under Phase I (2010–2013) of the National Solar Mission, developers had to abide by a 60% LCR for projects using photovoltaic crystalline silicon (c-Si) cells and a 30% LCR for solar thermal and concentrated solar power, to qualify for the 25-year power purchase agreement with a fixed FiT. Photovoltaic modules using thin-film technology were exempted from the 60% LCR, unlike projects using photovoltaic panels with c-Si technology. Since October 2012, only locally manufactured photovoltaic modules can qualify for the “Off-Grid and Decentralized Solar Applications” support scheme (which provides a capital subsidy of 90% of the benchmark cost for solar-photovoltaic power projects below 100 kilowatts).

**Box 10.3** *continued*

During Phase II (2013–2017), the auction for 750 megawatts of photovoltaic capacity included a mandatory LCR, to be eligible to receive Viability Gap Funding. Under international pressure, the LCR was reduced in scope to cover only a part of the total capacity auctioned. Nevertheless, by 2017, more than 1 GW will have been awarded with the LCR. Against this backdrop, the US filed a complaint against India at the WTO. In February 2016, the WTO Dispute Settlement Body ruled that the LCR was not compliant with the WTO TRIMs agreement, and in September 2016 the Appellate Body upheld the ruling.

This ruling added further precedent to a previous example of a successful WTO challenge against an LCR introduced by the Canadian province of Ontario in connection with its FiT subsidy scheme. In that case, the LCR was found to be in breach of the General Agreement on Tariffs and Trade, and the Agreement on Trade-Related Investment Measures commitments, though the FiT scheme itself was not found to be in breach of the Agreement on Subsidies and Countervailing Measures.

Sources: As cited in text, and for WTO disputes, see [www.wto.org/english/tratop\\_e/dispu\\_e/cases\\_e/ds412\\_e.htm](http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds412_e.htm) and [www.wto.org/english/tratop\\_e/dispu\\_e/cases\\_e/ds456\\_e.htm](http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds456_e.htm)

## 10.5 Barriers to Trade in Services

Over time, the global importance of trade in services has risen significantly. Global value chains and highly streamlined international logistics networks have made international deployment of services a key part of modern trade. The value created by services as intermediate inputs now represents over 30% of the total value added in manufactured goods. The international trade regime addresses services trade through the General Agreement on Trade in Services (GATS), agreed in 1994. However, negotiations on specific liberalization commitments under the agreement have faltered over time and many barriers to trade in services remain in the form of domestic regulations.<sup>4</sup> Some of these are important for the low-carbon transition.

Trade in services is important for climate change mitigation in a number of ways. In general, more efficient services sectors contribute to improving productivity and enhancing competitiveness in

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<sup>4</sup> Progress is being made on a plurilateral basis. In 2013, a group of 23 WTO members started plurilateral negotiations on a specific Trade in Services Agreement that follows GATS principles and aims to establish commitments between signatories in areas such as licensing, financial services, telecoms, ecommerce, maritime transport, and professionals moving abroad temporarily to provide services.

manufacturing as well as in services sectors themselves (OECD 2014). Greater productivity will often lead to lower energy use and emissions intensity. Also, as economies become ever more interconnected through value chains, a trend toward “servicification” can be identified, with companies increasingly turning to provision of services attached to the delivery of goods. For example, a jet engine manufacturer is more likely to lease its engines to airlines, and an industrial turbine manufacturer is more likely to lease its turbine. This usually leads to better maintenance and performance of the equipment, resulting in lower fuel use and lower emissions. It is also likely to lead to better overall utilization rates of physical capital, thereby contributing to a more energy-efficient economy. But to be effective, this “servicification” of the economy requires smooth international trade in services (Swedish National Board of Trade 2014).

Concerning specific technologies important for climate change, such as renewable energy, its deployment is dependent on a wide range of services, many of which are imported and are not necessarily strictly environmental in nature, particularly in the context of developing countries. Business services, telecommunications services, and construction and related engineering services figure prominently (Steenblik and Geloso Grosso 2011). Low-carbon goods tend to be newer, high-tech goods requiring highly skilled personnel to install, operate, and maintain. Training of local users can also be important. Overall, this means that widespread diffusion of such technologies, particularly in developing countries, is likely to be more affected by barriers to services trade than “conventional,” more highly emitting goods.<sup>5</sup> Finally, services that are traditionally considered to be “environmental services,” such as pollution remediation, may also be important for climate mitigation.

Tracking and understanding trade in services is difficult due to data constraints. Recently, the OECD developed the Services Trade Restrictiveness Index (STRI) to shed light on barriers to services trade across different sectors and countries (Box 10.4). Although it has not developed an index specifically for environmental services, those for other service industries highlight where some countries could do more to remove barriers to services trade that would support low-carbon transition. Steenblik and Geloso Grosso (2011) documented examples

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<sup>5</sup> Exceptions do, of course, exist, such as technologies to convert coal to liquids and for extracting and refining oil sands, both of which involve higher life-cycle GHG emissions than producing petroleum from many conventional wells.

of all four modes of services trade identified in GATS<sup>6</sup> being relevant to climate change. These range from consulting services for energy efficiency (Mode 1), to ecotourism services consumed abroad (Mode 2), to the establishment of foreign subsidiaries to manage low-carbon projects (Mode 3), to temporary movement of personnel such as to carry out wind turbine repairs (Mode 4). The Swedish National Board of Trade (2014) identified a list of services indispensable to trade in environmental goods; these also cover all four modes, but with Mode 3 (commercial presence) and Mode 4 (natural movement of persons) predominating.

### **Box 10.4 Services Trade Restrictiveness Index**

Since 2014, the OECD has been tracking barriers to services trade across countries and sectors through the Services Trade Restrictiveness Index (STRI). The STRI contains a regulatory database of laws and regulations in existence today, and composite indexes that quantify identified restrictions across five standard categories, with values between zero and one. A score of zero corresponds to complete openness to trade and investment, while being completely closed to foreign services providers yields a score of one.

The STRI provides a unique diagnostic tool, generating a picture of services restrictiveness at the national level and by sector, covering 18 sectors in 40 countries. It allows benchmarking for individual countries and relative to global best practices, and enables countries to quickly see where the outlier restrictions are and where potential bottlenecks exist.

For the first time, comprehensive and comparable information is available for policy makers to scope out reform options and assess their likely effects; for trade negotiators to clarify those restrictions that most impede trade; and for businesses to understand entry requirements for foreign markets. The knock-on consequences for downstream users of these services are demonstrable. The STRI in combination with the OECD–World Trade Organization’s Trade in Value Added–Global Value Chain database are powerful tools for further analysis of regulatory spillovers in global value chains and the interdependence between sectors in an interconnected and increasingly digital world.

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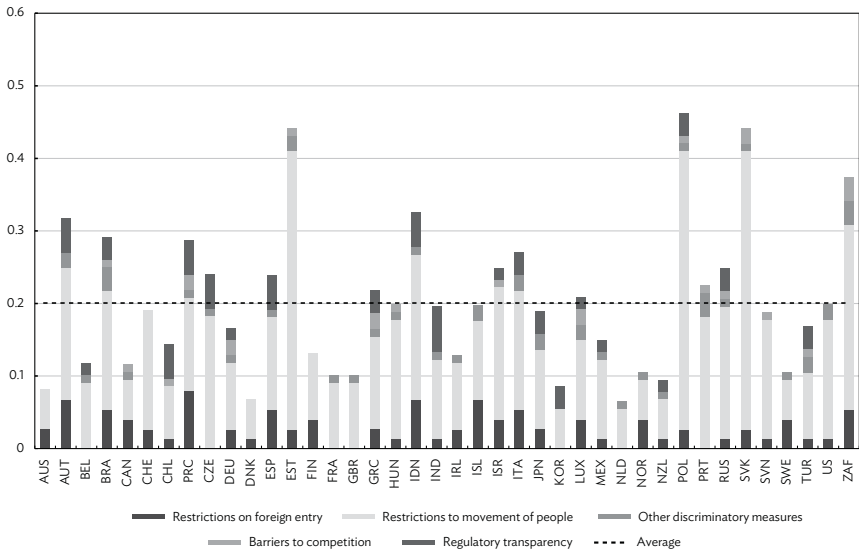
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<sup>6</sup> Mode 1, cross-border trade (the supplier is not present in the country in which the service is supplied); Mode 2, consumption abroad (an individual travels to a foreign country where the service is supplied); Mode 3, commercial presence (a service is supplied through a subsidiary established in the host country); Mode 4, movement of natural persons (an individual travels abroad to supply a service in a host country or to work as an intra-corporate transfer under Mode 3).

**Box 10.4** *continued*

Figure 10.2 shows an example of STRI data for engineering services, a key service area relevant to climate change technology. Engineering services are labor-intensive, particularly at the high-skill level. Therefore, measures categorized under “Restrictions to movement of people” have the strongest impact in the restrictiveness levels for these services. The other policy category that affects the degree of restrictiveness in engineering services relates to “Restrictions on foreign entry.” Some countries maintain ownership restrictions on the basis of qualifications and licensing, at times coupled with residency and licensing requirements for board members and managers of engineering firms. More open services markets improve competitiveness and productivity both in the services sectors in question and downstream industries using services as inputs. Engineering services underpin infrastructure and the smooth functioning of essential public services. Hence, promoting the cost-effectiveness and quality of these services can represent a source of economic growth and create significant spillover effects.

**Figure 10.2 Services Trade Restrictiveness Index by Policy Area: Engineering Services**



STRI = Services Trade Restrictiveness Index.

Note: The STRI indexes take values between zero and one, one being the most restrictive.

Source: OECD, 2014. Services Trade Restrictiveness Index: Policy Brief. Paris: OECD. [www.oecd.org/tad/services-trade/STRI%20Policy%20Brief\\_ENG.pdf](http://www.oecd.org/tad/services-trade/STRI%20Policy%20Brief_ENG.pdf)

## 10.6 Resilience of the Modern Trade System to Climate Change

Modern global value chains (GVCs) have become increasingly international, connected, and reliant on domestic policies that are open to international trade and fair to international investors. Intermediate goods may cross borders many times in their journey from primary material to finished goods. Expedient movement of goods, machinery, and people is essential to ensure that the global production machine has a sufficient supply of services and materials to keep it running smoothly.

Recent work on GVCs (OECD 2013) points out that, increasingly, the “just-in-time” nature of value chains makes them quite vulnerable to external shocks. The OECD defines global shocks as “rapid-onset events with severely disruptive consequences covering at least two continents” (OECD 2011). One example, not climate-related, is the earthquake and tsunami in Japan in 2011, which had considerable knock-on effects on the global electronics and automotive industries. Another example is flooding in Thailand in 2012, which, at its peak, covered areas accounting for 45% of the world’s manufacturing capacity of computer hard disk drives and led to global disruptions, not only in the computer industry, but also in the automotive industry (OECD 2013).

Events such as flooding and severe storms are likely to intensify due to climate change, thus increasing the systemic risk inherent in GVCs. Companies are already responding by complementing “just-in-time” with “just-in-case” contingency plans and seeking trade-offs between cost minimization and security of supply. Companies are seeking to diversify risks geographically and between different suppliers, and there is some evidence of a trend toward “back-shoring” or “near-shoring” with GVCs being splintered into shorter chains. The OECD has helped countries understand their vulnerability to shocks via the TIVA database (OECD, WTO, and UNCTAD 2013), and is helping governments to better understand GVC risks through the G20-OECD Framework for Disaster Risk Management and the *OECD Principles for Country Risk Management* (OECD 2013).

When considering alignment issues in national strategies for climate change adaptation and resilience, it will be increasingly important to consider how each country’s position and role in GVCs, and the national policies shaping the participation of firms in those value chains, could be developed to ensure resilience in the face of increasingly frequent and severe weather-related shocks.

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# 11

## Trade and Sustainable Fisheries

*U. Rashid Sumaila*

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### 11.1 Introduction

Fish stocks<sup>1</sup> support livelihoods and enhance the food security and incomes of millions of people while supporting vital ecological systems. However, overfishing, pollution, climate change, unsustainable trade and globalization, and illegal and unreported fishing are threatening the long-term sustainability of fisheries worldwide.

The United Nations' Sustainable Development Goal 14 (SDG 14) highlights how marine resources are a crucial component of the world's vital natural resources, which, if managed effectively, can contribute significantly to reducing hunger and poverty in the world's most vulnerable populations.

In every continent of the world, fisheries are a key part of the “blue economy” and trade in fish and fish products play a vital role since it is extensive, with significant exports flowing from developing to developed countries. Imports are dominated by the markets of the European Union (EU), Japan, the United States (US), and the People's Republic of China (PRC), whose trade policies have a significant impact on fisheries trade and sustainability.

The purpose of this chapter is to explore the conditions under which trade in fishery resources can contribute to meeting key SDG components, that is, poverty reduction and reducing hunger through inclusive and sustainable growth. The goal is to demonstrate to the international development community and policy makers, especially in developing countries, the conditions under which trade policy in fish and fish products can be designed to help them achieve their sustainable development goals.

Given that fish and fisheries products are among the most traded commodities in the world, the point of departure for this paper is that

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<sup>1</sup> I will primarily be focusing on marine fish stocks, but most of the discussion in this contribution would also apply to aquaculture and freshwater fish stocks.

trade in fish and fish products has the potential to contribute to the SDGs' realization, but only if its benefits are promoted while its costs are minimized.

Private and public actors have tried to use trade-related measures to tackle development and environmental challenges around oceans and fisheries (e.g., Sumaila et al. 2016; Bellman et al. 2016). Multilateral efforts include agreement on port state measures to stop fish caught by illegal, unreported, and unregulated (IUU) fishing from entering trade (Young 2015; Hosch 2016), and negotiations on disciplines on harmful subsidies via the World Trade Organization (WTO) (Tipping 2016). The threat of bans by major importers appears to have had some success in motivating exporting countries to address their vessels' IUU fishing. Private food safety standards have proliferated, and growth of private sustainability standards is increasingly attracting the attention of governments (Bellman et al. 2016).

Trade-related measures can help to address the challenge of sustainable oceans and fisheries use, but will need to be part of coherent policy frameworks including improvements to management and governance of fisheries resources at all levels, and institute policies that would ensure that fishers and fishing communities are not left behind. In this paper, unlike in the other fish trade papers (e.g., Asche, Roheim, and Smith 2016; Bellman et al. 2016), I will take a broader approach to identifying policies that need to be in place for trade in fish and fisheries to support the implementation of the SDGs.

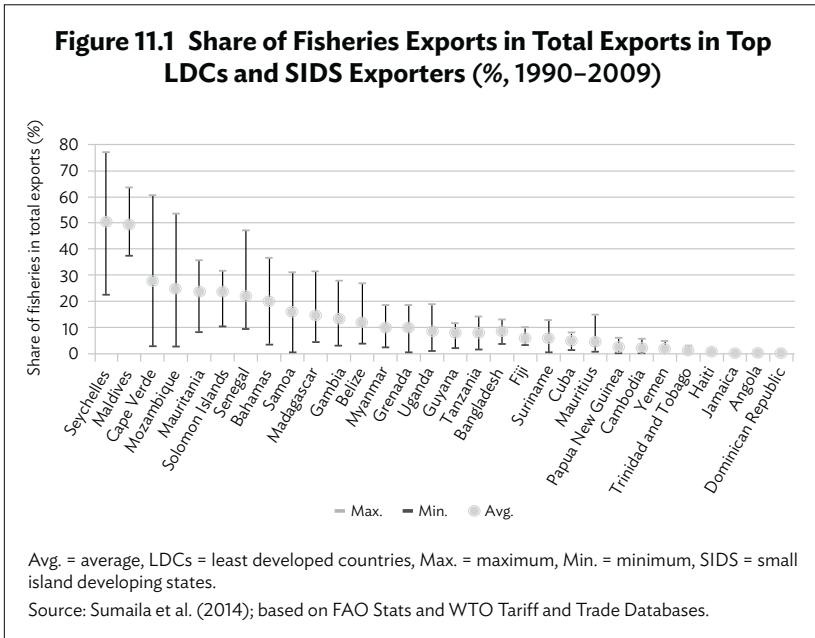
## **11.2 Fish Trade and the Sustainable Development Goals**

Fish and fisheries are economically and socially important, with impacts that must be managed effectively if we are to meet the ambitious goals of the SDGs. Fisheries worldwide currently catch about 130 million tons of fish a year, both reported and unreported (Pauly and Zeller 2016), which in 2015 dollars generates about \$180 billion annually (applying price information in Sumaila et al. 2007, and Swartz et al. 2013). Using the average global multiplier, a measure of the economic impact of a dollar of landed value of fish sold at the dock (Dyck and Sumaila 2010), marine fisheries create economic impacts of an estimated \$500 billion a year. Of the total amount of fish supplied, about 40% was marketed live, fresh, or chilled, while 46% was processed in frozen, cured, or other prepared forms for human consumption, with the remaining 14% allocated to non-food uses (FAO 2012).

Fisheries are particularly important in developing countries where they support numerous small-scale artisanal and subsistence fishers, who often provide crucial food supplies, sustain regional economies, and support the social and cultural values of the areas (Béné et al. 2010; Teh and Sumaila 2011). These sectors are crucial to the livelihoods of people living in many coastal communities around the world. The share of the total fish production that is exported increased significantly from 25% in the mid-1970s to nearly 40% in 2011, reflecting the sector's growing degree of integration in the global economy (FAO 2012). In recent years, liberalization policies, technological innovations, improvements in processing, packaging, and transportation, as well as changes in distribution and marketing have further accelerated this trend, while facilitating the emergence of complex supply chains in which goods often cross national boundaries several times before final consumption (Sumaila et al. 2014; Bellmann et al. 2016).

As stated in Sumaila et al. (2016a), developing countries account for more than 50% of all fisheries exports in value terms (60% in volume). The PRC, India, Indonesia, Thailand, Viet Nam, and Chile are among the leading players. Overall, net exports of fish and fish products from developing countries largely exceed those of agricultural commodities such as rice, meat, sugar, or coffee (FAO 2012). In terms of export markets, developed countries have traditionally represented a major outlet, with roughly two-thirds of developing countries' exports directed to them. A growing share of these exports consists of processed fishery products prepared from imports of raw fish that are processed and reexported. This reexport phenomenon reflects the growth of global value chains and how low-cost processing means fish may be caught in one part of the world, processed in another, and consumed in a third.

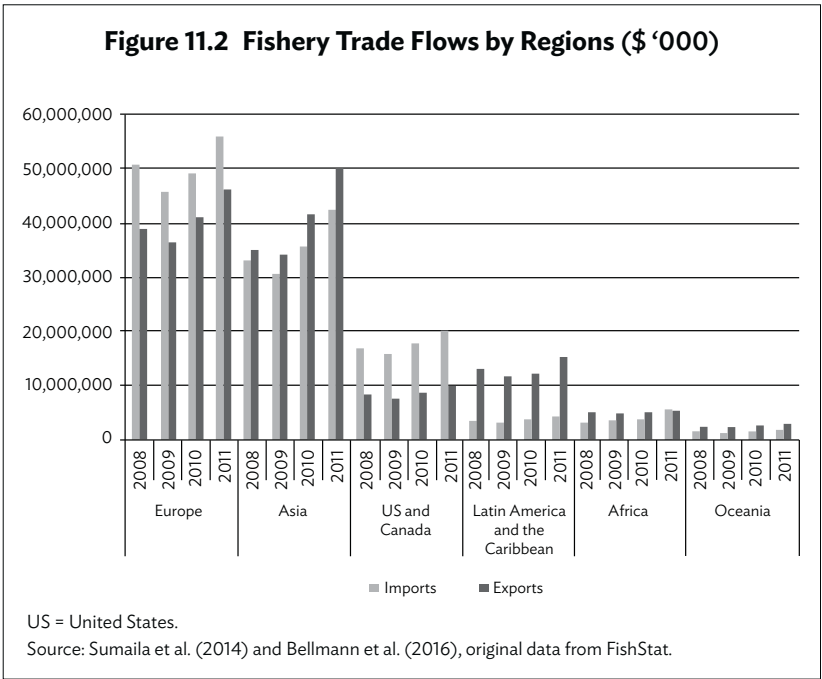
Figure 11.1, taken from Sumaila et al. (2014), presents the average share of fisheries in total exports for the top exporting least developed countries (LDCs) and Small Island Developing States (SIDS) between 1990 and 2009. The figure demonstrates the importance of fisheries to these countries' economies. We see that in countries such as the Seychelles, the Maldives, Cape Verde, or Mozambique, fisheries represented up to 50% of total merchandise exports, with this share going up to 60% or even 75% in certain years. This very high reliance on fisheries resources suggests these countries may be particularly vulnerable should the health of the fish stock decline as a result of overfishing, or should the fish stock move as a result of climate change (Sumaila et al. 2011; Cheung et al. 2013), severely undermining the



SDGs of poverty reduction (SDG 1) and hunger reduction (SDG 2) while sustaining marine ecosystems (SDG 14).

The leading fish importing countries in value terms are the US, Japan, and Spain. On the other hand, the PRC and Japan are the top importers in terms of quantity and value, respectively (Sumaila et al. 2014).

Figure 11.2 shows the value of global trade flows by regions. The EU, the US, and Japan are highly dependent on imports for their consumption (Swartz et al. 2010). The EU is the largest single market in the world, with about 26% of world imports. In recent years, however, several emerging markets have grown in importance including the PRC, Brazil, Mexico, and the Russian Federation, and the regions of Asia and the Near East in general. While developed countries were responsible for 86% of total imports in 1990, it was only 76% in 2010 (FAO 2012). South–South trade is likely to grow with rising disposable incomes in emerging economies, gradual trade liberalization, and a reduction in the high import tariffs due to the expanding membership of the WTO, and the entry into force of several bilateral trade agreements with strong relevance to fisheries (Sumaila et al. 2014; Bellmann et al. 2016).



### 11.3 The Promise of Fish Trade

Given the size and scope of global trade in fish and fish products described in section 11.2, trade plays a significant role in the quantity of fish caught and how the benefits of fisheries are distributed between and within countries. If effectively harnessed, the power of trade can be used to support the implementation of the SDGs. The key theoretical economic bases for trade are comparative advantage and specialization. These concepts mean that entities can get better outcomes by specializing in their comparative advantage. In this way, both entities capitalize on their comparative advantage and can produce more of the two goods than if they each produced both goods to meet their own respective demands. Hence, each entity gains from trade. Applying this concept to fish and fish products implies that trade can generate high economic growth, which if properly harnessed can help reduce poverty and provide the economic basis for marine conservation. On the other hand, trade protectionism can result in inefficiency (Johnson 1991), while trade liberalization can improve allocation and use of fishery resources.

The removal of trade restrictions such as tariffs, tariff escalation, export restrictions, subsidies, and nontariff barriers can benefit employment and possibly help conserve the marine ecosystem. It can also reduce prices of finished goods and provide consumers with a wider range of quality products.

By facilitating the transfer of technology between nations, international trade can promote more environmentally friendly technology at lower cost, which can help ease the pressure on marine ecosystems and fish stocks while helping to reduce poverty and hunger.

As we will see in section 11.4, some of the benefits of trade are double-edged swords that need to be managed carefully to ensure the potential benefits outweigh the potential costs.

## 11.4 The Perils of Fish Trade

When a country or group of countries enjoys comparative advantage because of weak fisheries management, or the provision of subsidies, or because they sell fish that are illegally caught, this may create incentives for other countries to relax their fisheries policies and management. Furthermore, lax polices may steer investment capital to fisheries in countries with little or no regulatory oversight, resulting in a so-called race to the bottom—a situation in which many countries deliberately weaken their fisheries policies and management to be competitive in a market that is supplied from regions of the world with lax regulatory regimes (Arden–Clarke 1991).

A key concern about trade in fish is that the benefits may not reach fishers and fishing communities, thereby undermining the anti-poverty and anti-hunger SDGs because, in many instances, developing countries may end up with no fish and no money (Kaczynski and Fluharty 2002; Le Manach et al. 2012). A related concern is that international trade can transfer technology through joint ventures that allow large industrial fleets to fish in another country's waters, which can harm fish stocks, the ecosystem, and people who depend on fish and fishing for their food and livelihoods.

Another major concern is that many fisheries around the world are not managed effectively (Pitcher et al. 2009), leading to increased pressure on fish stocks and overfishing through increased demand. This would exacerbate overfishing through a reduction in food security and losses in revenues, jobs, and incomes (Arnason et al. 2008; Sumaila et al. 2012).

International trade is also a primary means by which invasive species get transported around the world. Ships and fishing vessels



moving to different countries often transport species to different marine ecosystems.

A final concern is that when governments commit to free trade, they typically agree to several trade principles. Many people are concerned that such principles and laws can undermine the ability of governments to effectively manage their local and national fisheries. This is one of the issues that many opponents of the Trans-Pacific Partnership (TPP), for example, are worried about.

## 11.5 How Can Trade in Fish Support the Implementation of the SDGs?

To support SDG 14 (Life Below Water) in particular, but also SDGs 1 (No Poverty); 2 (Zero Hunger); 5 (Gender Equality); 10 (Reduced Inequalities); and 12 (Responsible Consumption and Production), trade in fish and fish products has to contribute to (i) the conservation of fishery resources; (ii) reducing poverty and inequality in the distribution of fisheries' benefits; and (iii) the creation of inclusive growth in the fisheries sector.

To assess whether trade in fish would positively impact achieving the SDGs, the following key questions need to be addressed. First, how do we ensure that trade is a boon to conservation and sustainability? Second, how do we make sure that trade does not increase inequality in societies, but rather helps to reduce poverty and hunger among the world's most vulnerable populations?

Fischer (2010: 107) summarized the literature on trade and natural resource management: "trade liberalisation can be a boon to resource-rich countries, but not always; that trade can lead to the depletion of natural resources, but not always; and that trade bans can be appropriate, and certified trade can be helpful—but not always." This quote clarifies how trade and its impacts on nature and people is complex and difficult to assess.

The literature explores ways in which policies can be designed to ensure that trade is a boon to fish stock-rich countries, especially those in developing countries; that trade does not deplete fishery resources, but rather supports their conservation and sustainable use; and that trade in fish and fish products combats poverty and hunger.

The price of fish is one channel through which the effect of its trade is felt. For a small, fish-rich developing country, trade would increase prices (Fischer 2010), and basic fisheries economics tells us that, in a situation where fisheries are not effectively managed, this will result

in overcapacity and overfishing (Clark 1990). Even if fish stocks are managed optimally, in the long run, steady-state welfare and stock sizes may be lower (Bulte and Barbier 2005; Sumaila and Walters 2005), which ultimately would lead to unsustainability and an increase in poverty and hunger. Hence, to mitigate the effects of trade on the price of fish, it is crucial and necessary, if not sufficient, that fisheries management in fish stock-rich exporting countries is effective.

Sumaila (2012), echoing the literature, identified a number of challenges that need to be addressed to achieve good governance or effective management of fisheries: (i) tackle the common property or open access nature of fishery resources; (ii) mitigate and adapt to climate change, ocean warming, and acidification; (iii) discipline the provision of trade-distorting, capacity-enhancing, and inequity-generating government subsidies to the fishing sector; (iv) stop illegal, unreported, and unregulated (IUU) fishing; (v) address the self-defeating tendency to undervalue future fisheries benefits; and (vi) find a meaningful way for aquaculture to contribute to meeting our animal protein needs.

Other important challenges are the need to (vii) enhance the position of women in fisheries; (viii) reduce corruption in fisheries and fish trade; and (ix) “buy” insurance by creating marine protected areas.

The SDGs are crosscutting and so is trade in fish because we are dealing with matters at the intersection of healthy oceans, sustainable fisheries, reduction of poverty and hunger, increasing gender and group equity, and the trade system. This clearly requires a comprehensive approach that takes into account ecological, economic, legal, and local realities, as well as existing multilevel governance regimes.

### **11.5.1 Enabling Policy Conditions for Trade in Fish to Support the SDGs**

Below I briefly outline some necessary conditions for trade in fish to be sustainable; to support a reduction in poverty and hunger; and to increase equity in the distribution of fisheries benefits between genders and across different groups of peoples. Most of the conditions and policy recommendations below relate to making fisheries management more effective, which is clearly an important prerequisite for achieving sustainable fish trade.

#### **Open Access and Common Property Nature of Fish Stocks**

Many fisheries within country exclusive economic zones (EEZs) and in the high seas are still effectively open access or common property fisheries that are not managed cooperatively (Cullis-Suzuki and

Pauly 2010; Norse et al. 2012; White and Costello 2014; Sumaila et al. 2015). It has been shown that under these regimes, the tendency is to overcapitalize and overexploit the resource (Munro 1979; Sumaila 2013). The root cause of this overfishing has to be treated if fish trade is to be sustainable and in a manner that supports the SDGs. To mitigate these problems, more effective access structures, from the local to the national and global jurisdictional levels, are needed where they do not exist and strengthened where they do.

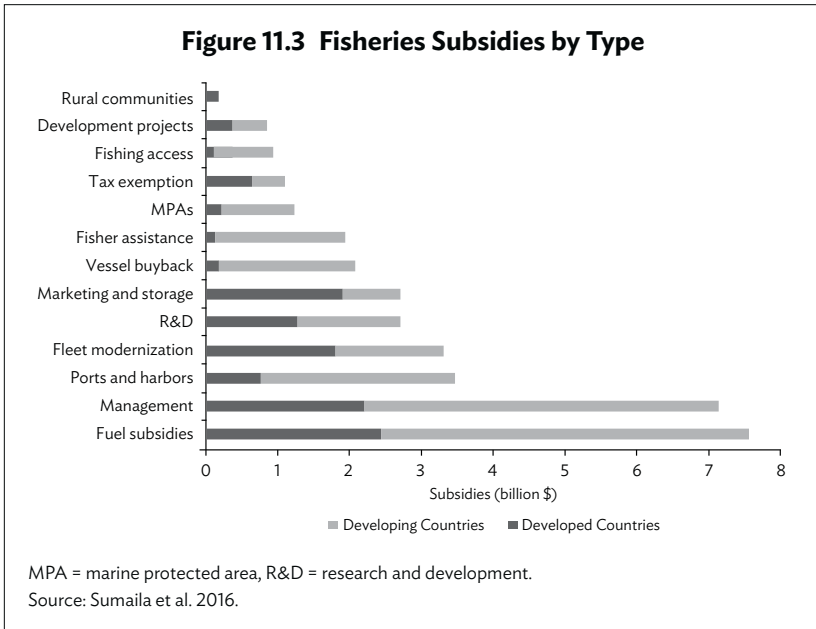
### **Illegal, Unreported, and Unregulated Fishing**

IUU fishing occurs in many parts of the global ocean (Sumaila et al. 2006; Agnew et al. 2009). IUU fishing hampers fisheries management by making it difficult to determine total biomass removal; further, it distorts trade and results in economic losses to legal fishers and the formal economy as IUU catches ultimately enter illicit trade. IUU fishing should be minimized or even eliminated completely for trade in fish to support the SDGs. The good news is that trade policies and measures can actually contribute to the fight against IUU fishing (see below).

### **Trade-Distorting, Capacity-Enhancing, and Inequality-Generating Subsidies**

The most recent estimate of fisheries subsidies puts it at \$35 billion a year globally and that most of this (approximately \$20 billion) is capacity-enhancing overfishing subsidies (Sumaila et al. 2016b). Also, subsidies are usually trade distorting as it provides recipient companies with an advantage over companies that do not receive them. A third and important issue is that ongoing bottom-up estimation of how much of the total subsidies go to small-scale rather than large-scale fisheries reveals that only a small fraction of the total is received by self-sustaining fisheries (Schuhbauer et al. 2017). The combined negative effects of overfishing, trade distortion, and self-sustaining fisheries being disadvantaged is why eliminating capacity-enhancing fisheries subsidies is specifically mentioned in SDG 14. Clearly, the elimination of subsidies is crucial in ensuring that trade in fisheries supports sustainability and the reduction of poverty and hunger as stipulated by the SDGs (see below).

Figure 11.3 below presents the amounts of the different types of subsidies that make up the \$35 billion total. The figure shows that fuel, arguably the most capacity-enhancing subsidy, constitute the largest provided by governments to the fishing sector. We also see from the figure that developing country fisheries receive far less in subsidies than those operated by or in developing countries.



### Balance Current and Future Needs from Fish and Fisheries

Balancing current against future needs is difficult even at the individual level when the consequences in terms of costs or benefits of failing to do so fall squarely on the individual. At the societal level, achieving balance between now and the future is even more difficult as people suffer the “problem of short-sightedness in valuation” and they tend toward instant gratification (Sumaila 2004; Sumaila and Walters 2005). This problem stems from the general human perception that what is closest to us appears to be large and weighty, while size and weight decreases with our distance from things, both temporally and spatially (Sumaila 2012). This human tendency is captured by the economic concept of discounting—that is, the approach by which values to be received in the future are reduced to their present value equivalent using a discount rate. This tendency drives us to want to frontload fisheries benefits resulting in overfishing and unsustainability. For trade in fish to be sustainable, fisheries policies to mitigate this tendency are needed (Nijkamp and Rouwendal 1988; Ainslie and Haslam 1992; Neumayer 2000; Weitzman 2001; Sumaila 2004; Sumaila and Walters 2005).

### **Enhance the Position of Women in Fisheries**

Women are important players in the fisheries sector, but their contribution, and the economic, social, and cultural well-being of families and communities around the world, continue to be overlooked and marginalized. Traditionally, fishing has often been very narrowly defined as men catching fish, but more evidence is beginning to show that women do engage in fishing and in a large proportion when “fishing” is expanded to include the full fish value chain (e.g., Harper et al. 2013). Contributing to this perception that fishing is a man’s activity is fisheries research, management, and policy being traditionally focused on direct, formal, and paid fishing activities, which are often dominated by men, and ignoring those that are indirect, informal, and/or unpaid, where women are most often engaged (Teh and Sumaila et al. 2011). The unfortunate effect of this is that there is a lack of policy attention given to the role of women in fisheries, with serious consequences for food and nutritional security, poverty alleviation, and well-being (Bennett 2005; Harper et al. 2013). For trade in fish to support the SDGs of no hunger and poverty by 2020, the role of women in fisheries must be highlighted and their position enhanced.

### **Reduce Corruption in Fish and Fish Trade**

Weak governments that do not control their agencies often experience high levels of corruption (Kolstad and Søreide 2009). Yet, corruption can also extend beyond government to include the abuse of private office for individual gain (Bardhan 2006). In particular, “corruption in natural resource management is defined as the use or overuse of community natural resources with the consent of a state agent by those not legally entitled to it” (Robbins 2000). Thus, the potential for corruption exists at every link in the natural resource (e.g., seafood) supply chain. To effectively manage fisheries generally, and in support of fish trade for sustainable development, every effort has to be geared toward eliminating corruption (Sumaila et al. 2017).

### **Buy Insurance by Creating Marine Protected Areas**

There are many reasons why fisheries scientists like marine protected areas. For economists, in particular, a good reason to like marine protected areas is that they can serve as a buffer against management errors, which cannot be completely avoided because of what is described in the literature as irreducible uncertainties in fisheries (Lauck et al. 1998). With climate change and its effects on the marine ecosystem biophysics, it is getting more difficult to manage fisheries effectively and optimally. When things are complex, a wise way to achieve a goal

is apply simple approaches and solutions. Portfolio managers are a good example—many of them diversify their portfolios as a way to manage risk and uncertainty. Implementing a marine protected area as part of the management tool kit to ensure that trade in fish is sustainable and supports the SDGs is a wise thing to do.

### **Support Climate Change Mitigation and Adaptation Measures**

Humanity continues to pump high quantities of carbon dioxide (CO<sub>2</sub>) and other greenhouse gases into the atmosphere, which is changing the climate, warming the oceans, and affecting ocean chemistry and physics. These changes in turn directly and indirectly affect the physiology, growth, reproduction, and distribution of fish species and other marine organisms. Fish in warmer waters will probably have a smaller body size, be smaller at first maturity, with higher mortality rates, and be caught in different areas of the ocean than is typical (e.g., Cheung et al. 2013). These in turn would affect the economics and social contributions of fisheries in different parts of the world (Allison et al. 2009; Sumaila et al. 2011; Lam et al. 2016). Hence, at the general level, every effort should be made to mitigate CO<sub>2</sub> emissions. At the fisheries sector level, strategies and plans should be developed and implemented to help coastal communities adapt to the coming changes.

### **Develop Sustainable Aquaculture Practices**

We have witnessed rapid growth in aquaculture production in recent years (averaging growth of about 8% per year). Aquaculture has consequently come to be seen by many as the solution to our food fish supply problem. However, in terms of the SDGs, there is reason to temper this high level of optimism because the PRC alone accounts for about 60% of world production of farmed fish; with depleted wild fish stocks, countries, including cash-strapped developing ones, will have to import fish from the PRC, which may not be cheaply available because of the PRC's high domestic demand. This situation is almost sure to increase poverty and hunger among vulnerable populations in least-developed coastal communities around the world, thus acting against SDGs 1 and 2. To mitigate this, current management of wild fish stocks needs to be strengthened to ensure that they are sustainable. Also, we need to support the development of sustainable aquaculture that actually adds to the quantity of fish available by taking in less fishmeal and oil in weight than the final quantity of fish actually produced. One way to achieve this is to restrict farming to mainly herbivorous fish such as tilapia, carp, and the like.

## 11.6 Trade Measures and Policy Options that Support the SDGs

Here, we describe how trade measures could be implemented to promote fishery resource sustainability. To increase the likelihood that these measures will succeed, certain prerequisites need to be in place, as stated in Sumaila (2016). First, fish trade policies need to be inclusive, transparent, and coherent since the oceans are interconnected both via nature and markets. Fish do not respect national boundaries as they swim, and fish trade, by nature, involves more than one country. This implies that trade-related measures in support of healthy oceans and sustainable fisheries require international collaboration that is fair and inclusive.

Next, more transparent information is needed to support international collaboration and joint action, including around fisheries data and trade policies. This can be done by bringing private and public sector information together in integrated data platforms. The E15 Oceans, Fisheries and Trade expert group argues that this is an important basic requirement for the successful implementation of trade-related measures (Sumaila 2016).

One more prerequisite is capacity building: People make things happen and well-trained and equipped people make things happen better. Effective trade policies require a concerted global effort to train people who can ensure implementation not only of trade measures, but also other sustainable development policies (Sumaila 2016).

In the next two subsections, I present trade policy options and measures to help tackle these issues based mainly on the work of the E15 Oceans, Fisheries and Trade expert group as reviewed in Sumaila (2016) that could help combat IUU fishing and discipline capacity-enhancing fisheries subsidies.

### 11.6.1 Combating Illegal, Unreported, and Unregulated Fishing Using Trade Measures

The goal is to suggest trade policy measures as key elements of a solution. This could be achieved by progressively closing down international trade in IUU fish products, chiefly by making it difficult for them to enter the market.

As suggested in Sumaila (2016), we need to build consultative, effective, and coordinated unilateral import measures. The EU's IUU regulation, which incorporates an escalating warning system, is having an impact (Hosch 2016). A key gap in the current situation

is that the EU's import policy is limited to one market, although the US is developing options. For this recommendation to succeed, other large seafood markets need to adopt trade measures that incorporate good aspects of the EU system, such as those that address IUU fish transshipment and imports (Sumaila 2016). This approach should not be implemented as a punishment, but as a way of helping fishing nations to reduce or even eliminate IUU fishing within their EEZs. Therefore, unilateral measures should include consultation with affected trading partners and organized in stages with import bans invoked only as a last step. Critically, unilateral measures need to consider their impact on producers in low-income countries.

A network of regional measures to address IUU fish trade needs to be created in different parts of the world. This is because unilateral measures are effective only to the extent that producers cannot easily supply their products elsewhere. The global nature of fisheries trade means that many producers may be able to sell IUU fish in less regulated markets. To extend the reach of import measures, they need to be adopted bilaterally or regionally through trade agreements. It would be valuable to use regional trade agreements as a way to link unilateral IUU trade measures in a cohesive network with broad country coverage—either directly or by establishing platforms that will help countries converge toward best practices (Sumaila 2016). Examples could include provisions in the Transatlantic Trade and Investment Partnership (TTIP) to ensure coherence between the EU and US systems, and the establishment of IUU platforms in the Trans-Pacific Partnership (TPP) and the African Tripartite Free Trade Area (TFTA). To increase the effectiveness of these measures, linkages would need to be developed with large import markets, especially the PRC, that are not parties to the agreements (Sumaila 2016).

Building on unilateral actions is the need to develop a system of multilateral instruments on trade in IUU fish products. Individual country and regional approaches to closing the market for IUU fishing products could gradually change the economics such that their cost is too high to make it worthwhile on a large scale. However, a comprehensive and inclusive solution to the problem would most efficiently be negotiated multilaterally. Regional agreements can be used to support the entry into force of other multilateral instruments, and to establish, through the WTO, a code of conduct on illegal fish trade. Endangered marine species could be listed in Appendix I or II of the Convention on International Trade and Endangered Species; and elements of best practices from unilateral and regional systems could be captured in a voluntary code on IUU fish imports and transshipment within the WTO (Sumaila 2016).



Another recommendation relates to using private sector schemes. It is generally understood that state-based solutions alone will not be enough to address the challenges of IUU fishing, hence, the need for complementing these solutions with private sector initiatives and solutions. Private sector sustainability and legality certification schemes are being developed, with some having well-developed traceability systems. One shortcoming of these schemes is that they are usually applied in developed markets, which leaves much of the market for fish in developing countries not covered. Private schemes could contribute more by enhancing the participation of developing country fisheries in sustainability and legality certification. Assistance directed at the development of data collection and infrastructure to enable traceability and certification could be provided as Aid for Trade (Sumaila 2016).

### **11.6.2 Disciplining Fisheries Subsidies**

Fisheries subsidies have been on the global agenda for several years, notably via the WTO. This is because there is a general consensus that certain fisheries subsidies, known as “bad” or capacity-enhancing subsidies, lead to overfishing (e.g., Milazzo 1998; Abdallah and Sumaila 2007). So far, efforts to reduce subsidies have not been very successful.

There is therefore a need to build momentum toward a multilateral agreement on subsidy reform; the following options, proposed in Sumaila (2016), could help the world make progress in significantly reducing the so-called “bad” subsidies.

A foundational requirement is the need to create a better worldwide data source on fisheries subsidies. At present, there are a few independent assessments of actual subsidy levels (e.g., Sumaila and Pauly 2006; Sumaila et al. 2016) against which to evaluate inconsistent WTO notifications. Increasing transparency is a necessary condition for further work on subsidies disciplines. Action can be stimulated by revealing the scale of the problem and by providing data sets that are accepted by governments responsible for implementing reform. A solid database would provide a basis for both governments and civil society to measure subsidy reductions or increases. This would improve consistency across national policies, strengthen momentum for collective reform, and enable the reporting and implementation of reduction commitments to be verified (Sumaila 2016).

One way to make progress toward a multilateral agreement on disciplining subsidies is for a group of countries that understand the negative effects of some subsidies to implement subsidies disciplines. Such a coalition could pursue such an agreement in the context of a

regional trade agreement, which they can combine with rules that specify preferential conditions under which their group would trade fish and fish products with countries that are not participating in the agreement. The latter is an attempt to mitigate the negative effects of free riding on members of the group.

The subsidies discipline movement could borrow from the approach adopted by the Intergovernmental Panel on Climate Change by establishing multilateral disciplines built stepwise and bottom-up. Here, the WTO could stimulate collective action with bottom-up voluntary subsidy reform commitments. Countries would, under this approach, declare the amount of capacity-enhancing subsidies that they would voluntarily eliminate within a given time period. Based on the sum total of voluntary commitments, the WTO would then negotiate the remaining “ambition gap” between the offers made and the level of overall multilateral reductions required (Sumaila 2016).

The work of the WTO should not go to waste, with one way for the global community to restart negotiations being based on the areas of relative agreement identified during the last Doha Round. Even though the first best option is to implement an ambitious multilateral agreement, the WTO could pursue the ultimate goal by establishing disciplines built on areas of subsidy reform that attracted the most support in earlier negotiations. These include subsidies to IUU fishing, vessel transfers, and access agreements (WTO 2007). There was arguably some level of consensus about reforming vessel construction subsidies and those affecting overfished stocks. It may therefore be possible for WTO members to agree to eliminate a small list of subsidies in the interest of healthy oceans and sustainable fisheries by focusing on the low-hanging fruits in the first instance (Sumaila 2016).

It has been argued that a key reason for the lack of progress in protracted subsidies negotiations at the WTO is that they suffer from the requirement that negotiators should aim for an all-inclusive deal (Sumaila 2016). This has limited the ability of the subsidies negotiations to make progress by confounding the issue with other problems. To overcome this difficulty, we need to align subsidies policies with national interests by splitting the world’s fisheries into domestic and international. The former would comprise fisheries operating within a country’s EEZ, targeting fish stocks that spend all their lives within the zone. The latter would include fish stocks that are trans-boundary, highly migratory, or discrete high seas stocks. International negotiations could then prioritize agreements to reform subsidies that affect international fish stocks, while governments, pressured by civil society, would work unilaterally to reform subsidies that affect their domestic fisheries (Sumaila 2016).

### 11.6.3 Tariffs and Nontariff Measures

Here, I address issues in international fisheries trade, particularly in relation to developing countries, that relate to tariff and nontariff barriers. Given the wide range of fisheries activities and the communities in which they are situated, governments will need to work case-by-case to ensure that they integrate tariff liberalization into fish trade and trade flows in a sustainable manner.

Sumaila (2016) argued that differentiating between wild-caught and aquaculture fish products in tariff lines would enable better measurement of global fisheries' changing production structure, and improve the traceability of products through the value chain. This would in turn help policy makers address the differences in the environmental impacts of the two production methods and ensure that marine fisheries trade in a manner that supports the SDGs.

In general, as tariff preference margins are gradually eroded, preference-dependent countries will need to adjust. More flexible rules of origin in preferential arrangements could help such countries diversify their sourcing of inputs and allow them time to find ways to access global fish networks. Flexibility could be conditioned on fish meeting sustainability and legality requirements. Beyond rules of origin, there may be a case for international financing mechanisms, including under the Aid for Trade initiative, to provide technical assistance for producers to adjust to a loss in competitiveness (Sumaila 2016).

To continue this theme, fishers that are small, located in developing countries, with limited access to capital, or operating in fragmented industries are at a disadvantage when it comes to meeting high standards in export markets. Given the contribution of fisheries trade to employment and income in many developing countries, an inclusive approach in which fishers can move toward certification is essential. The private sector has an important role in this recommendation. Private actors are well positioned to both improve access to existing certification schemes and assist fishers and retailers (Sumaila 2016).

As the WTO Agreements on Technical Barriers to Trade (TBT) and Sanitary and Phytosanitary (SPS) Measures do not formally cover private standards and labels, nongovernment standard-setting bodies should be encouraged to adhere to the TBT Agreement's Code of Good Practice for the Preparation, Adoption and Application of Standards (Sumaila 2016). To harness their economic power to shape fishing patterns and ensure they are inclusive, these schemes should be encouraged to follow basic principles set out in the 2000 Decision of the TBT Committee on international standards, such as transparency, openness, and coherence, while preserving their effectiveness as incentives for

sustainable fisheries and aquaculture production (Sumaila 2016).

There are differences in the national SPS and TBT systems, which sometimes are applied inconsistently. Mutual recognition between large markets can exclude other producers and reduce their competitiveness—even when these standards can be met. To ensure that these integration tools covering behind-the-border measures are inclusive, the parties to large regional trade agreements (e.g., the TPP, the TTIP, and the African TFTA) could consider including a linking mechanism by which trading partners who are outside of the agreement, but whose testing and conformity assessment systems enjoy mutual recognition with one or more of the parties involved, could benefit from the agreement's wider mutual recognition provisions (Sumaila 2016). This option, combined with technical assistance and capacity building to meet recognition requirements, particularly for LDCs, could help change the cost-benefit equation for producers outside of the regional agreements.

## 11.7 Conclusion

The literature on trade and sustainable development is clear that trade in fish can be done in such a way that it supports the SDGs. This can be achieved by implementing both certain trade-related measures and policies and broader measures that pertain to the effective management of fisheries more generally, and the equitable distribution of the benefits of trade in fish among and between different groups in society, especially between different genders. We have provided recommendations and measures/policies that would help countries and the global community to achieve the core SDGs of sustainable fisheries that support inclusive economic growth and development.

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# 12

## The Trade and Water Nexus

*Alexandre le Vernoy*

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### 12.1 Introduction

At first sight, trade and water may appear to be disjoint subject matters. But closer examination reveals a stimulating and often overlooked set of intersecting opportunities that can be leveraged to address some of the most pressing development challenges the world is facing. The recently adopted framework of the Sustainable Development Goals (SDGs) recognizes the importance of such interlinkages and the integrated nature of the global goals. Understanding these nexuses is critical for delivering a sustainable development agenda. This chapter reviews the conditions under which international trade, trade policies, and trade-related institutions can effectively (but not solely) contribute to the resolution of the current and future water crisis.

By 2050, global demand for water will have risen by 55% and wastewater discharges of growing urban populations will have increased nitrogen effluents by 180% compared with today's rates, creating severe water stress that will affect about 4 billion people's livelihoods (OECD 2012). It is under this scenario that the international community agreed on a specific water goal as part of the SDGs.

Water insecurity is rooted in four major concerns: physical scarcity (aggravated by climate patterns); declining quality; weak management (and regulatory frameworks); and infrastructure gaps. The water crisis is affecting all dimensions of the use of this resource, whether for Water Access, Hygiene and Sanitation (WASH) purposes, or for agricultural and industrial purposes.

At a global level, it is expected that under a business-as-usual scenario, by 2030, the demand for water will outpace current supplies by 40% on average and by more than 50% in countries that are developing most rapidly (WRG 2009). Contributing to 70% of the world's water withdrawals, agriculture and farmers will suffer the most from the water crisis. At current growth rates, the coming decade is likely to witness a cereal production shortfall of 30% (WRG 2009). A recent World Bank report suggests that the crisis will have impacts beyond agriculture to

affect industrial capacities. In India, for instance, over the course of 2015, power plants suffered from long shutdowns due to decreasing levels of water in dams and reservoirs and due to erratic monsoon seasons. Overall, lack of water in all its forms could reduce the world's gross domestic product by 2.6% (World Bank 2016).

Global averages should not shift the attention away from varying local situations. Across all continents, we now see the effect of shifting climate patterns impacting water availability in quality and quantity and, in turn, affecting economic activities in unprecedented ways (Jouanjean, le Vernoy, and Simonet forthcoming). Droughts and water shortages in South Africa, California, Australia, and southern parts of the People's Republic of China (PRC) are examples showing that this is not just an issue for least-developed countries; the water crisis is affecting all continents irrespective of their level of wealth.

A related issue is the lack of access to water and the essential services it provides in terms of health and hygiene. The Millennium Development Goals (MDGs) already contained a WASH goal to draw attention to the considerable infrastructure that was required to provide universal access to water. While substantial results were achieved in that respect over the past 2 decades, many countries are still significantly lagging, particularly in sub-Saharan Africa. A growing demography and the rural–urban shift are powerful trends that justify new responses to the crisis.

Access to water is not just an obvious necessity. Accessing water in sufficient quantity and quality is also the basis for any country to lock in all the potential of its economic development. Technology, innovation, and hard infrastructure are the three pivotal components of a meaningful resolution to the water crisis. Investments in infrastructure and services will ensure that the WASH goal is reached and all sectors of the economy can access reliable water. Strong management that articulates planning, distribution, and efficiency with consistent and adequate regulatory frameworks will ensure availability. In situations of acute water stress, when demand cannot be met, strong management practices and governance instruments represent the only guarantee that trade-offs will be weighted optimally.

Various concerns over water usages may be concomitant to international trade. These are not necessarily a root cause, but rather a by-product of how countries decide to produce and trade. One of the most striking examples is the case of irrigated cotton production for exports by Uzbekistan that drove a severe and almost irreversible depletion of the Aral Sea. Kenya's exports of cut flowers are taking place at the expense of a drained Lake Naivasha (Hoekstra 2010). Through heavy subsidies, Saudi Arabia has long been a top-10 wheat exporter, leading to the overuse of the country's fossil underground water. Recognizing the

severe strain put on its groundwater resources, Saudi Arabia recently decided to phase out its heavily subsidized cereal production and rely on international food markets. As such, international trade can also be part of the solution to the lack of water, acting as a mechanism to compensate for unsustainable water abstraction in water-scarce countries. For instance, in many Middle Eastern and North African countries, lack of water is a key driver for food imports, without which food security would be impossible.

This chapter argues that many solutions to the water challenge can be found in a more concerted openness to international flows of goods and services. A development-oriented trade regime coupled with suitable domestic policies may help counteract the water crisis and perhaps support its resolution in the medium term. Therefore, international trade can help achieve the water ambition of the SDGs.

This chapter investigates the channels by which and the conditions under which international trade may contribute to tackling the water challenge. The first section shows the conceptual advances moving from the MDGs to the SDGs in addressing the water crisis and how this shapes international trade and trade policy. To further reveal the interconnectedness between trade and water, the chapter distinguishes between direct and indirect effects. The second section investigates the direct effect of trade, looking at how upgrading water management and infrastructures requires inputs in terms of goods, services, investment, and innovation, many of which can be sourced from abroad or facilitated multilaterally. The third section looks at an indirect, but no less powerful effect of trade through the use of water as a production factor and the analysis of the concept of virtual water. The final section discusses potential policy implications necessary to unlock the win-win scenario of the trade and water nexus in a way that promotes the achievement of the SDGs' water goal.

## 12.2 The SDGs Provide a Better Water Agenda

At the time of the United Nations' approval of the MDGs in 2000, many international agencies and organizations had already voiced their concerns about a water crisis rooted in a worsening supply and demand gap, as well as misaligned management practices. The MDGs did not provide much room for a wider approach that should have encompassed aspects beyond WASH and included water quality issues, management of wastewater, efficiency, and conservation of aquatic environments. In essence, the SDGs now support the view that water is embracing many aspects of a strong development agenda. This section investigates the progress made conceptually moving from the MDGs to the SDGs and

how the latter provide an improved framework to better leverage the interconnectedness between trade and water.

Trade has received more attention in the discussion that led to the agreement on the SDGs than was the case for the MDGs. As the messaging in official documents is so carefully weighted and scrutinized before their adoption, it is interesting to look at how words have been used to build each agreement. Table 12.1 compares the number of occurrences and the frequency (i.e., number of occurrences per 1,000 words) across a set of keywords that are presumably important for appreciating the focus of sustainable development discussions. The comparison is

**Table 12.1 Mentions in Official Declarations—  
Counting Occurrences and Frequencies**

Words	SDGs Official Declaration of Adoption (1)		MDGs Official Declaration of Adoption (2)	
	Frequency	Occurrences	Frequency	Occurrences
development	11.2	170	8.1	28
women/gender	3.0	46	2.0	7
environment(al)	2.2	34	2.3	8
health	2.0	31	none	none
<b>(fresh)water</b>	<b>1.8</b>	<b>28</b>	<b>0.9</b>	<b>3</b>
agriculture/land	1.7	26	none	none
poverty	1.6	24	2.9	10
hunger/food	1.4	21	0.9	3
(in)equality	1.2	18	0.9	3
peace(ful)	1.2	18	4.9	17
resilience/resilient	1.2	18	none	none
<b>trade</b>	<b>1.1</b>	<b>17</b>	<b>0.6</b>	<b>2</b>
energy	1.1	16	none	none
private sector/sphere	1.1	16	0.6	2
inclusive/economic growth	0.9	14	none	none
ecosystem	0.8	12	none	none
WTO/World Trade Org.	0.5	7	none	none

MDG = Millennium Development Goal, SDG = Sustainable Development Goal, WTO = World Trade Organization.

Note: Frequency denotes number of occurrences per 1,000 words.

Sources: Count by the Author; (1) From Outcome document of the United Nations summit for the adoption of the post-2015 development agenda; (2) From Resolution adopted by the General Assembly toward the MDGs declaration.

done by scanning through two significant milestones—the Resolution adopted by the General Assembly of the United Nations consecrating the MDGs, and the Outcome document of the United Nations summit for the adoption of the post-2015 development agenda (adopted by the General Assembly of the United Nations).

The designers of the SDGs have put more emphasis on water and trade compared with the MDGs. The words “(fresh)water” and “trade” are significantly more frequently used in the SDGs. Interestingly, the term “private sector” is also more widely used, perhaps because of the current appreciation of its role in supporting the development agenda. It is also important to note that World Trade Organization (WTO) and “ecosystem” are now mentioned in the SDGs. Looking at the two documents in more detail, it is important to note that the SDGs allow for a more complex approach on the grounds that most of the issues are interconnected and cannot be approached in isolation. SDG 6 defines the water target for the 2030 agenda as follows: “Ensure availability and sustainable management of water and sanitation for all”:

**6.1** Achieve universal and equitable access to safe and affordable drinking water for all.

**6.2** Achieve access to adequate and equitable sanitation and hygiene for all, and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.

**6.3** Improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated waste water, and increasing recycling and safe reuse globally.

**6.4** Substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity, and substantially reduce the number of people suffering from water scarcity.

**6.5** by 2030 implement integrated water resources management at all levels, including through trans boundary cooperation as appropriate.

**6.6** by 2020 protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.

There are other areas and goals that explicitly mention water and water security as a means to achieving the agenda, providing the following touch points:

Goal 3. “Ensure healthy lives and promote well-being for all”  
3.3: By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases.

Goal 11 “Make cities inclusive, safe, resilient and sustainable”  
11.5: By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations.

Goal 12 “Ensure sustainable consumption and production patterns”  
12.4: By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.

Goal 15 “Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss”  
15.1: By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.

The capacity to ensure access to water has major impacts on several aspects of economic development such as health, energy, ecosystems protection, stable agricultural production, and food security. The resilience of these systems also correlates with access to the resource in case of sudden, short, or longer shocks. As shifting precipitations and temperatures affect cropping patterns and, hence, agricultural production, or as sudden adverse weather affects infrastructure, climate shocks will threaten the speed at which populations and

economic activities can recover. This stresses the need for stimulating synergies across several goals. Most of the concepts referenced in the goals about freshwater management have been around for more than 2 decades (Integrated Water Resources Management, water pricing, and ecosystems and their services). But their practical application and implementation have been hampered locally by lack of adequate and mature regulatory frameworks.<sup>1</sup> Hence, without more clarity about how to translate these goals into specifically designed domestic policies and targets, it is difficult to project their impact on the water crisis. At this stage, it remains interesting to see how existing tools and institutional structures can help address the water crisis in general and achieve the water goal in particular.

Modern responses to water scarcity involve a balance between adopting hard and soft strategies. Hard approaches refer to infrastructures, maintenance and operations, traditional water storage systems, storage management, water reuse, desalinization, and integrated flood management. These contrast with soft interventions aimed at curbing inefficient uses or establishing proper institutional frameworks. They focus on demand-oriented approaches and use instruments such as pricing mechanisms, efficient technologies, establishing a culture of conservation, land-use planning, and education and communications.

Another soft strategy often mentioned is the relationship between water and international trade. It is recognized that international trade holds a promise for water savings and its reallocation to higher-value alternative usages and production processes. Materialized by the concept of virtual water described below, the concept allows for an interesting compromise to align both demand-based and supply-based approaches into a single vision. Combined with appropriate domestic policies, trade in agricultural products may contribute to reducing imbalances between countries using water more or less efficiently.

SDG 6 certainly recognizes one of the most pressing issues surrounding the current water challenge, which is the lack of access to WASH currently affecting about 2.5 billion people. The SDGs have lacked ambition in that they fail to clearly identify water as one of the key issues for prosperity. Of course, access is the most pressing challenge, but it would have been beneficial to put it in a more complex perspective of the manifold interconnections water has with other challenges such as long-term sustainable agriculture, and energy security, that cannot

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<sup>1</sup> The concept of integrated water resource management was put forward as early as 1992 and included in the Dublin principles following the Rio commitments.

be effectively tackled in isolation. While it remains a second-best instrument, trade can be a powerful instrument to tackle the water crisis.

Further below we look at the direct and indirect contributions of international trade to these two dimensions of water management responses. The literature relating to the water crisis is unambiguous about water being a local issue that has regional and global ramifications particularly through the impact of globalization (Hoekstra 2010). In a context of climatic disruptions, trade may act in the medium term as the insurer of last resort. It also emphasizes the idea that the trade and water communities of experts and decisions makers share common ground. Seeking an aligned agenda between the two communities could provide powerful support for an ambitious and practical implementation of the SDGs. Critically, the misunderstanding that has led the debates over the past decades (particularly on the topic of privatization of water, described below) could have detrimental effects on securing the achievement of the SDGs. Through applying the right concepts and instruments, and through appropriate policy implementation, there is a clear win-win case for delivery on the SDGs.

## **12.3 Direct Effect: Bridging the Water Services, Infrastructure, and Technology Gaps**

Ensuring a response to the water challenge depends on the capacity to attract new investments and secure services (distribution and treatment of water). Parallel to this, the difficulty of maintaining or replacing aging water-related infrastructure has been widely documented (OECD 2011). The security of access to water can only be achieved through funding for infrastructure projects on drainage, treatment (of both raw water and wastewater), distribution, abstraction, and storage. All those areas are critical to achieving SDG 6. This section suggests some ways to think about international trade as a conduit to redress part of the gap in water technologies, services, and investments.

### **12.3.1 Trade in Water Services: A Substantial Benefit Eclipsed by an Erroneous Perception**

The market for environmental goods and services has grown rapidly over the past decade and is expected to reach \$1.9 trillion by 2020 (Bucher et al. 2014). As defined by the Organisation for Economic Co-operation and Development (OECD), environmental goods and services refer to activities “that produce goods and services to measure, prevent,



limit, minimise or correct environmental damage to water, air, soil, as well as problems related to waste, noise and eco-systems.” Following this definition, the uneven technological capacities across countries creates a positive role for international trade to distribute these goods and services through several channels—transfer of technologies, direct investment of companies holding patents, or direct export.

Although gaps are still wide across countries, with developing countries still catching up, environmental regulations have evolved significantly in recent years. As far as water use and treatment is concerned, national standards have on the whole become more stringent and have been supported by a wave of revisions of domestic water laws. The water sector is still largely concentrated, with just a few multinationals operating, for two main reasons: First, these multinationals have the capacity and the reach to beat the market and historical operators are difficult to challenge from a cost perspective. Second, municipalities and other users of water-related services continue to trust historical operators to implement technologies and processes that comply with increasingly complex regulations. But the landscape is likely to change. Developed countries are more mature in implementing environmental regulations and growth is expected to shift to developing countries, with some of them already developing their own sector, South Africa and Taipei, China being examples. Moreover, with regulation on water distribution, treatment, and collection evolving rapidly, the industry is becoming more responsive to breakthrough technologies, which makes the sector more competitive. As water management is extremely dependent on local contexts, we expect it will facilitate small domestic businesses more capable of reacting and responding to them (WTO 1998).

A reduction in trade barriers and the promotion of services in the water sector could support the transition to a more stringent regulatory framework that preserves water resources and ecosystems by providing efficient solutions at lower costs.

There has been strong opposition to the incursion of the private sector into water services, with the upsurge in several developing countries fueling a heated controversy over the past 2 decades. Central to the debate is the symbolism attached to water—inherited from representations, traditions, and cultures—and the possible social implications of adaptation to a new management model. Such resistance should not be taken lightly and recent experiences of privatization show it reflects legitimate concerns. Customs, cultural practices, and even myths can explain a variety of management practices of water resources, which often clash with the utilitarian views advocated by modern approaches (McCool et al. 2008). While water pricing is expected to correct the lack of signal of scarcity, this solution is often viewed as a

narrow and doctrinaire approach that shakes the foundation of the value of water.

Defining the institutional framework for water services has been difficult, with the debate dichotomy-driven so far between private and public provision. In light of this, it is important to remember some of the basic principles behind the General Trade Agreement on Services (GATS). The literature generally expects liberalization of services to generate the following benefits (Bates 2009): consumer savings via reduced trade barriers; greater transparency and predictability through an agreed set of rules, and long-term investment—all of which are better discussed and settled multilaterally.

The agreement on services does not provide any guidance as to whether water services (or any other services) should be owned and managed by public or private entities, and there is nothing in the general rules and principles (contained in the agreement) that forces a country to privatize water-related services (ODI 2005). As such, GATS, under the auspices of the WTO, says nothing about how water provision should be handled by member countries.

The agreement adopts a positive approach whereby GATS signatories schedule their commitments in a list of choices. Countries' commitments do not apply unless the sectors and their corresponding subsectors are expressly inscribed in the schedule. To date, GATS-based commitments to liberalize water services and related sectors have been rare. One explanation is linked to the sensitivity of this issue, but it may also be due to the complexity of the classification for water. The only water sector clearly referenced is sewage services, found in the category of environmental services. Commitments on other water-related services should thus be scheduled under a different and generic category such as construction and related services or distribution services.<sup>2</sup> A better classification (which is part of an ongoing discussion) could clarify liberalization negotiations.

Trade in water-related services, unfortunately, is driven by many erroneous perceptions that may have eclipsed the potential benefits of the trade agreement vis-à-vis investment and high-value services from abroad. The opportunity cost may come at a high price point for countries that lack capacities to implement efficient services themselves. GATS negotiations are still hindered following the deadlock of the Doha Round of negotiations. A coalition of the willing, comprising 23 WTO members (including the European Union) recently decided to move forward in the area of trade in services. It is still unclear how the Trade

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<sup>2</sup> I-TIP Services is a joint initiative of the World Trade Organization and the World Bank.

in Services Agreement (TiSA) might deal specifically with water. The communication lesson has been learned and the coalition took time to defuse expectations about public services in general and water in particular.<sup>3</sup> It will be interesting to see whether the coalition manages to clarify the debate on the liberalization of key “public” services, particularly around water.

At present, it looks unlikely that we will see major unilateral, regional, or multilateral GATS commitments on water services. Yet, alongside South Africa, several national governments that were reluctant to schedule GATS-based water commitments have nevertheless started to liberalize their services (outside the multilateral framework of negotiation), as they recognize the private sector’s pivotal management role. This position strongly echoes the simplistic treatment of water-related services in the current multilateral trade system that fails to address ensuring access for the poorest (Muller 2003). This consensual opposition to strong GATS commitments on water-related services is unfortunate insofar as it hampers and delays the mutual benefits that international trade coupled with efficient domestic regulations could bring about to resolve the water crisis.

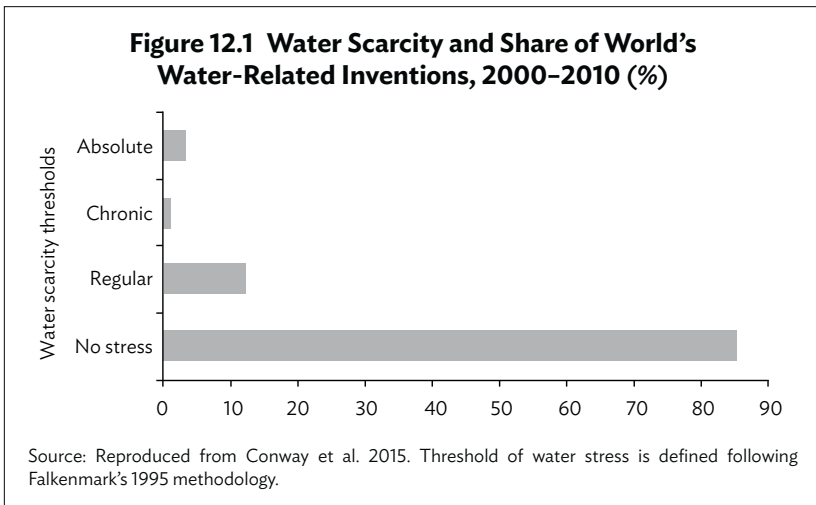
### 12.3.2 Technology and Innovation Transfers

An efficient framework to support a wider diffusion of water technologies remains crucial to addressing the water crisis. Even with improved infrastructure, the diffusion of innovations and technologies constitutes a powerful supply-side approach to the lack of access to water and the preservation of the resource. Added to intellectual property rights not being well enforced and secured, private companies holding patents will continue to prefer investing themselves rather than licensing their technology, narrowing down the channels through which technology can be diffused and adopted.

International technology transfers can in principle also positively impact the demand side by ensuring that agricultural, industrial, or domestic water users are granted access to non-research and development (R&D) innovative processes and instruments focusing on more efficient water usages. A novel study by Conway et al. (2015), using patent disclosure data, suggested that most supply-oriented inventions tend to originate in countries where water availability is relatively high (the results are reproduced in Figure 12.1).

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<sup>3</sup> The European Commission website has a dedicated page to address frequently asked questions about TiSA. <http://ec.europa.eu/trade/policy/in-focus/tisa/questions-and-answers/> (accessed 15 February 2017).



Having these inventions and innovations developed in countries where they are less needed justifies such a global diffusion. With environmental regulations adequately enforced and monitored, the reduction of trade barriers and constraints on foreign direct investment, leading to more open international trade, should promote the diffusion of these technologies and inventions. Some countries have demonstrated that this is possible. The role of knowledge centers is critical as well and is contributing to a rapid growth in the water-related R&D sector. Alongside mature actors in water-efficiency technologies in several developed countries, Singapore is a singular and compelling case described by Speight (2015). Water treatment in Singapore was an apparent competitive disadvantage, but also an obvious need. Through its efforts in specialization, Singapore has significantly reduced its dependence on water imported from Malaysia through investing in desalination technologies and now serves as a global water R&D hub. Large multinational companies are now investing in Singapore to support water technology research.

The literature usually distinguishes four main channels for effective international technology transfers: foreign direct investment, movement of people, trade in goods, and knowledge spillovers (Hoekman et al. 2004). The existence of regional knowledge and research hubs on water also calls for a stronger role for international trade that could promote North–South as well as South–South technology transfers. Also important is the role of prior local capacity to effectively absorb the innovation for international diffusion to be a success. Lack of training

and technical assistance is frequently a cause of local water authority implementation failures. Cases of transfers of waste and water treatment technologies have been well documented (Tébar Less and McMillan 2005) and demonstrate yet again the importance of local and domestic capacity building for local officials to ensure diffusion.

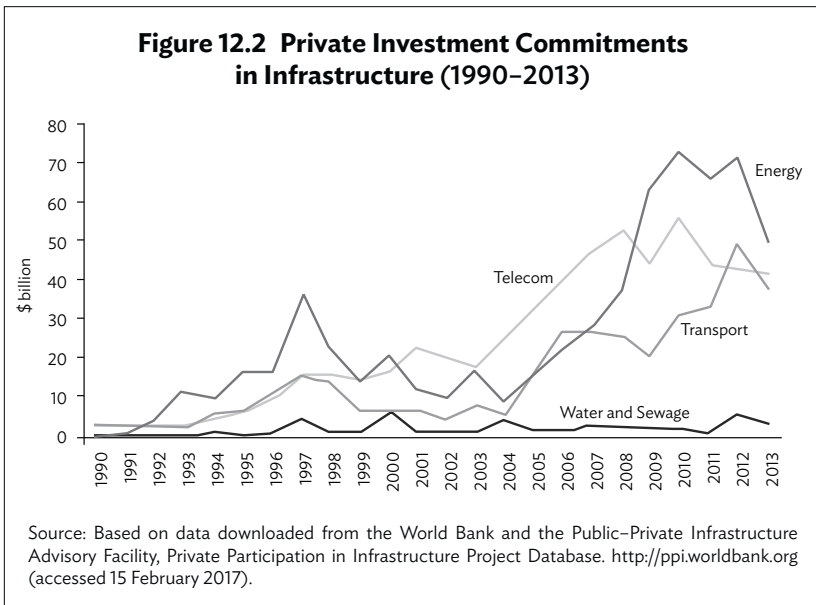
### 12.3.3 Trade and Infrastructure

Reliable infrastructure is essential for international trade and global integration. What is true for transport and energy infrastructure is also true for water as a basic input for most economic activities. Ensuring the right level of investment in water-related infrastructure thus becomes a precondition for reaching SDG 6. And the trade and investment nexus has a role to play in accelerating the development of infrastructure in water as well as in other areas and to strengthen a country's competitiveness while achieving poverty reduction.

Demand for water sector investment is expected to increase rapidly, creating a predictable gap between the current funding capacities and new infrastructure requirements. Globally, \$11.7 trillion of investments have been made in water facilities and other forms of related infrastructure to support the projected growth toward 2030 (McKinsey 2013).

As mentioned above, there are several channels through which the water crisis can be alleviated, but technology and hard infrastructure will remain pivotal for ensuring equitable and sustainable access. Investments in water are largely the prerogative of the public sector given their capital-intensive, public-good nature and because they require important early investments that have generally low rates of return with extended payback times. The private sector is being granted an increasingly important role in water services and infrastructure. Yet, compared with the energy, communication, or transport sectors, the water sector is undermined by the private sector's lack of enthusiasm. Data from the Private Participation in Infrastructure Database developed by the World Bank shows that the water sector has suffered from chronic private sector underinvestment. Major trends are reported in Figure 12.2.

The lack of investment is also more apparent in regions where it is needed most, such as in sub-Saharan Africa where, incidentally, progress toward realizing the MDGs has been limited. While the notion of water risk is increasingly being integrated into private sector business strategies, it does not seem to stimulate enough investment despite a worsening of the water crisis. In light of this, official development assistance should consistently focus on supporting infrastructure in developing countries generally and water infrastructure in particular.



Above all, development partners should ensure a sound investment climate for the private sector.

Several policy choices could foster investments, but most important would be a consistent multilateral regime to aggregate disparate domestic policies. The OECD recognizes that even though water infrastructure is not a trade-related category per se, water for irrigation and meeting sanitary and phytosanitary standards (SPS) do in fact “contribute to productivity and the ability to compete.” Water availability is an essential parameter for food safety and to safeguard exporting capacities and compliance with international SPS (e.g., GlobalGAP). In line with this, the Aid for Trade agenda could make a significant contribution to the quality side of the water challenge by ensuring that investments (and official aid) support requirements around SPS and technical barriers to trade requirements.

## 12.4 Indirect Effect: Virtual Water

As pointed out in the previous section, significant differences across countries in both availability and access to technologies can explain the struggle to preserve existing water or mobilize untapped resources.

In much the same way, we witness varying levels of agricultural technologies across countries, along with sharp differences in labor productivity as well as land availability. These are considered some of the main driving forces behind international agriculture. As water is a crucial input for agriculture, an additional question, therefore, is whether relative international differences in water availability also contribute to shaping international trade flows.

Cross-border transfers of bulk water are politically sensitive and the integration of water as a commodity in trade agreements leads to delicate negotiations among states over ownership and sharing. During the negotiations to conclude the North American Free Trade Agreement (NAFTA), Canada forced the inclusion of a clause in the regional trade agreement to “protect” its freshwater from exports. Recently, an American water export company launched a lawsuit against Canada for \$10.5 billion and the case has been filed under Chapter 11 of NAFTA. But water is hardly ever traded as such. Notable examples of cross-country water transfers are projects between the south of France and the autonomous region of Catalonia in Spain, and between South Africa and Lesotho. Most large-scale transfers still occur domestically. The PRC is just finalizing the largest network of pipelines in history to transfer water from the north to the south of the country, at a total length of 4,350 kilometers. Large-scale water transfers commonly attract attention from the media and scrutiny from civil society, particularly concerning their environmental and social implications.

Through the Harmonized Systems, customs classify bulk water explicitly as “ice, snow and potable water not sweetened or flavoured.”<sup>4</sup> Imports of bulk water reported to the United Nations statistical agency amounted to an annual average of 0.34 cubic kilometers (km<sup>3</sup>) between 2011 and 2015, an insignificant volume compared with the annual global average withdrawal of 3,908 km<sup>3</sup> over the same period.<sup>5</sup>

However, water is being transported by other means. It can flow between trade partners through imports and exports when it is accounted for as a production factor. Virtual water is the volume of water used (and embedded) in the production of a good or a service (Allan 1997). Each production process requires dissimilar amounts of water, which may

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<sup>4</sup> The exact HS code is 22-01. Chapter 22 includes all beverages, spirits, and vinegar, whether they are bottled or not, but does not cover (i) products of this chapter (other than those of heading 2209) prepared for culinary purposes and thereby rendered unsuitable for consumption as beverages (generally heading 2103); (ii) sea water (heading 2501); and (iii) distilled or conductivity water or water of similar purity (heading 2853).

<sup>5</sup> World Bank. World Development Indicator database.

vary from country to country. While products are traded regionally or globally, movements of goods involve virtual transfers from one trading partner to another of the water used in their respective production process. This water is said to be virtual because it is not present as such in the product, but was required for its production.

From a pure trade economics perspective, the theory of comparative advantage revolves around trade in factor services, also referred to in the literature as the factor content of trade. The theory shows how trade takes place among countries based on how much of a relative factor is used in the production of goods and depending on the relative cross-country differences in endowments of the production inputs. This section summarizes the debate so far about virtual water and suggests some aspects of its applicability and implementation from a trade policy perspective.

### **12.4.1 Virtual Water: Can Trade in Goods be a Solution to Water Scarcity?**

A methodology to calculate virtual water flows associated with trade in crops and livestock was developed through the evaluation of a product- and country-specific water requirement coefficient (usually measured in cubic meter of water per ton of product). Pre-multiplying this coefficient by the trade flow of the corresponding product allows for the quantification and the mapping of volumes of virtual water between trading partners. It gives interesting insights into the water content of trade flows across the world. The key importers and exporters of net virtual water flows are ranked in Table 12.2.

Some of these results may be at odds with the conventional perception of the state of the resource. How can two parched countries like Australia and India be major exporters of virtual water?

Australia's freshwater withdrawals represent just 3% of its total renewable water resources. This country-level average hides local differences across states and territories. The Murray-Darling basin's economic activities are underpinned by significant farming activities that use irrigation as the main mode of production adding up to the use of 80% of the basin's available water, while contributing to 5% of the gross domestic product of the area. Although it represents a small fraction of the basin's economy, water shortages could come at a high price for the continued growth of the country. The southwest of the country is also constrained by reduced rainfall supplies, a dynamic that is already affecting wheat production. It is worth noting that, according to the Australian government, 80% of the wheat produced in that region is exported. One of Australia's main trading partners of wheat



**Table 12.2 Top 10 Net Virtual Water Exporters and Importers (km<sup>3</sup>)**

Rank		Net Virtual Water Exports km <sup>3</sup> in 2005	Pressure on Water Resources (%)		Net Virtual Water Imports km <sup>3</sup> in 2005	Pressure on Water Resources (%)
1	Australia	64	3	Japan	92	19
2	Canada	60	1	Italy	51	28
3	US	53	14	UK	47	6
4	Argentina	45	4	Germany	35	21
5	Brazil	45	1	Rep. of Korea	32	42
6	Côte d'Ivoire	33	2*	Mexico	29	17
7	Thailand	28	13*	Iran	15	68
8	India	25	34	Spain	14	33
9	Ghana	18	2*	Saudi Arabia	13	943*
10	Ukraine	17	8	Algeria	12	67

km<sup>3</sup> = cubic kilometer, UK = United Kingdom, US = United States.

Notes: In this table \* denotes data for 2006. Data on pressure on water resources express freshwater withdrawal as a percentage of total renewable water resources and derived from the Aquastat database of the Food and Agriculture Organization of the United Nations.

Source: Data on virtual water flows are from the Water Footprint Network and Hoekstra et al. 2003.

is Japan, a country that, given its size, geography, and hydrogeology, is crucially lacking both land and water and relies on virtual water to ensure its food sufficiency. The water crisis in several regions of Australia has urged its government to implement a profound revision of its water management to redirect its use to higher-value usages. This does not necessarily exclude that agricultural production should be exported, as international trade in agriculture represents a significant share of Australia's economic stability. In other words, even if there is a perceived disconnection between the size of a country's trade and its water availability, a solution to the challenge this represents can often be found in domestic regulations on access and use of water.

Water scarcity is rarely signaled through price. Because water is commonly mispriced, surface and groundwater are perceived as inexpensive sources. The reality is that water resources generally have a sharp marginal cost curve. As conventional water sources become scarcer, investment in unconventional supplies (desalinated water, reclaimed water, rain water harvesting) can find new market development, but this is not sufficient to tackle the issue in the medium term. For the more conventional provision of water, pricing policies are lacking and

existing ones usually do not reflect the level of scarcity. Without efficient domestic regulations to ensure the right level of production and the allocation of water to high-value use (whether the output is for the domestic market or the international market), the water crisis can only worsen. In short, the solution is not to limit trade in agriculture, but to ensure that management strategies correctly reflect the property rights and the common-good problem of the use of water.

### 12.4.2 Measuring and Securing the Gains from Trade

Can trade reduce imbalances between relatively water-stressed and relatively water-abundant countries? The concept of virtual water can shed light on this. The concept seemed novel when first coined, but it should be familiar to trade economists as it can be seen as an application of theories of comparative advantage and factor content of trade (Le Vernoy and Messerlin 2011).

Using the data on the water content of world trade, gross virtual water flows amount on average to 1,624 km<sup>3</sup>, with 61% of the total virtual water trade associated with international trade in crops, 17% with livestock, and 22% with industrial products (Hoekstra 2010). Water may be saved through trade provided it moves from high water productivity countries to low water productivity countries. Savings do not amount to the volume of virtual water of the imported product, but to the volume of water the importers would have required to produce the same quantity of product. Globally, savings represent on average 10% of global freshwater withdrawals (around 352 km<sup>3</sup> according to Chapagain et al. 2005). Given that gross flows of virtual water are for the most part explained by agricultural exports (as opposed to industrial trade) and that the current trade regime is heavily subsidized, this figure is in fact quite high. As imperfect as they are, the current trade rules are allowing for quite a substantial saving of water globally. At least, this figure gives a sense of what would be the cost of autarky or, alternatively, the scope of untapped opportunities that lies in further trade integration (Le Vernoy and Messerlin 2011).

Trade becomes an alternative to the costly transportation of a rather internationally immobile and hardly substitutable production factor. The calculation of the volume of freshwater being saved as a by-product of international trade does not say much about the drivers or causality of such a relationship. An important question is whether the relationship can partly be traced to relative water scarcity across nations (as noted above in the case of India and Australia). On this issue, the literature provides mixed results (Wichelns 2015). A study by Debaere (2014) based on recent data estimated water

endowments across countries as a source of comparative advantage (in a Heckscher–Ohlin setting). Debaere’s results suggest that relatively water-abundant countries export more water-intensive products, but that the water content of trade is less significant in explaining trade patterns than capital or relative labor endowments.

The literature singles out three major “noises” that impede perfectly capturing the potential gains from trade for a more efficient global allocation of water. They relate to lack of information about the resource, incorrect water pricing mechanism signals, and agricultural subsidies. Such elements can be addressed through concerted and consistent regional or global trade policies and domestic policies.

The overall amount of water available globally as well as the theoretical dynamics underpinning the water cycle has been established. Far less is known about local hydrological dynamics, particularly the state of groundwater resources. Catchment-based surveys often rely on outdated data. Furthermore, little is known about the dynamics of demand and the water resource extraction rate. The trend is advancing toward more monitoring rather than less, but local and national regulations are more often than not based on incomplete information. More efforts in that area would be welcome to ensure that SDG 6 is achieved.

As noted, water is too often mispriced and accounts for an insignificant share of production cost, rarely reflecting the value of scarcity and the cost recovery of the investments made to secure its availability. Moreover, if scarcity or decreasing quality issues are not correctly reflected in prices, it may leave the terms of trade generally unaffected by a relative difference in water endowments, hence distorting the positive impact trade can have on allocation of water uses. Natural resource pricing is typically a domestic policy prerogative, which reinforces the notion that the benefits of more open trade can only be achieved with a relevant set of domestic policies.

Agriculture has historically been subsidized, with the international trade system under the WTO recognizing the need to support farmers through direct support from the government, along with payments for environmental assistance programs and measures that should only have minimal impact on trade in areas such as research, disease control, infrastructure, and food security. There are examples of subsidies that distort the signal of water scarcity to the point that unsustainable use of water is being ultimately maintained rather than curbed (Boulanger 2007). On the other hand, we can assume that preserving some financial protection level of farmers can be important to ensure that water use is sustainable, which may require public investments and targeted regulations. But those instruments ought to be carefully assessed.

Following recent climate shocks and their impact on food production, countries are turning to food security policies to protect farmers and the agriculture sector from world price volatility. While it is understandable that countries want to reduce their exposure to world price volatility, this may come at an even higher price if it goes against sustainable water management. In this context, international trade should be considered as a powerful instrument in the medium term, to be used as insurance against climate shocks. The benefit of a more open international trade environment can only be safeguarded through stable and reactive domestic policy responses to protect domestic economies from adverse social implications and negative environmental externalities.

## 12.5 Conclusion and Policy Recommendations

With the current fragility of the WTO negotiations attracting most of the attention, commentators tend to overlook the importance of the rules themselves. The negotiations on the reduction of trade barriers have recently lost momentum, but the trade regime and its underlying principles are remarkably lean and efficient. While perfectible, they provide the framework for a vast set of policy options to harness the benefits of international trade.

Water challenges respond to local issues and confined circumstances requiring institutional responses at the catchment level. Taking a closer look at the trade and water nexus reveals the emergence of a water agenda with global concerns as well as global solutions and instruments. As the world only recently forged an ambitious climate agenda following the agreement at the 2015 Paris Climate Conference (COP21) and a development ambition through the SDGs, a stronger water regime has yet to materialize and is unlikely to develop quickly. This chapter argues that until a water regime develops, the current trade regime can be put to good use to address (partly) some of the most pressing water challenges.

The potential adverse effects on water resources of untenable productive activities, some of which have been recalled in the introduction of this chapter, cannot be dismissed. In these cases, international trade cannot be seen as the root cause of the unsustainable use of water. Mismanagement of the resource and shortsighted choices are at the core of the water crisis. This chapter looked at both direct and indirect linkages between international trade and water.

In a growing number of regions of the world, the water crisis has become so acute that ensuring acceptable access for all users, including ecosystems, must be managed by adopting a calculated risk approach and at an acceptable level of uncertainty. There is growing agreement

that public water policies will face (and perhaps already are facing) challenging trade-offs to achieve water security. While the reallocation of a scarce resource across productive sectors and users is politically sensitive, there are fewer painful trade-offs that can be looked at. Arbitration can be driven by thoughtful policies across supply-oriented approaches (e.g., infrastructure, transfers, storage systems) and demand-oriented approaches (e.g., pricing, planning, and greater use of efficient technologies).

International trade should be considered as a powerful solution to support both demand and supply-oriented responses to the water crisis. When discussing the direct effect of international trade on water, we mentioned some critical areas where progress can be made and where international trade can support. A more concerted and open international trade environment could help secure solutions, notably through a sound investment environment for water-related infrastructure and the capacity to source input, technologies, and innovations from abroad. This chapter also suggests the existence of an indirect channel through which international trade can support the alleviation of the water crisis through the concept of virtual water. It shows how tightly trade in agriculture (and industrial products) is linked to the use of water and the (relative) availability of the water resource. That a growing number of water-scarce countries are relying on food imports is not just the result of an accidental correlation. Through the reallocation of water to higher-value uses at the country and regional level, coordinated trade and trade policies can positively impact balancing out the lack of water across countries.

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# 13

## Trade, Labeling, and Food Safety

*Norbert Wilson*

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### 13.1 Introduction

The economics literature has developed theoretically founded and empirically supported analysis that suggests that international trade is an engine of economic growth globally (Anderson and Martin 2005; Bhagwati and Srinivasan 2002; Dollar and Kraay 2004; Maertens and Swinnen 2009). Further, the analysis makes the point that impediments to free trade are impediments to the predicted growth and welfare benefits. Several of the Sustainable Development Goals (SDGs) suggest that improving well-being is achievable through trade. In particular, SDG 8 (Promote inclusive and sustainable economic growth, employment, and decent work for all) and SDG 12 (Ensure sustainable consumption and production patterns) can be supported by the free flow of goods and services internationally, which encourages efficient production and expansion of consumption.

### 13.2 Trade Effects of Nontariff Barriers

After the signing of the Uruguay Round of the World Trade Organization (WTO), particularly the Agreement on Agriculture, concerns arose that codified globalization would lead to a race to the bottom in terms of safety and environmental concerns (Young 2003). However, Vogel (1995) argues that under certain conditions trade could lead to an improvement (“trading up”) in these areas because of the exchange (cf. Hart 2007; Maertens and Swinnen 2009; Murphy, Levidow, and Carr 2006; Shepherd and Wilson 2013; Swinnen and Vandemoortele 2011; Swinnen et al. 2015; and Young 2003). Further, the economics literature



suggests that these standards<sup>1</sup> can enhance trade. Given improvements to consumer welfare, the net effect of standards can be beneficial (Beghin, Disdier, and Marette 2013; Beghin et al. 2013; Disdier and Marette 2010; Swinnen and Vandemoortele 2011; Swinnen et al. 2015; and van Tongeren et al. 2010).

Researchers also express concerns that nontariff barriers (NTBs), such as labels and food safety regulations, which may be used to trade up, would rise and limit trade and limit the welfare-enhancing benefits of freer trade (Henson 2007; Henson, Masakure, and Cranfield 2011; Wilson and Anton 2006). In particular, the thought has been that these NTBs would limit developed countries and, in some instances, lead to even greater harm for exports of developing countries compared with developed countries (Otsuki, Wilson, and Sewadeh 2001a; Otsuki, Wilson, and Sewadeh 2001b; cf. Shepherd and Wilson 2013; Tran, Wilson, and Anders 2012; Tran, Nguyen, and Wilson 2014). A challenge of these regulations centers on the question of when these policies are implemented to protect domestic producers or to enhance trade. Further, if the intent of the policies is appropriate, differences in perspective of expectations of quality, safety, and risk tolerance shape what level of information, ethical concern, or food safety requirements is appropriate between countries. However, Swinnen et al. (2015) suggest that the intent of the policy may not matter; rather, the context of the standards (political factors, producer costs, consumer demand conditions, etc.) may shape the effect of the standard more. Given that the SDGs are achievable, the potential negative effects of labeling and food safety regulations, as with other NTBs, would need managing so as not to limit trade in a distortionary fashion. In this chapter, I will lay out the effects of labels and food safety regulations on international trade, especially for developing countries.

A *prima facie* argument is that the intent of the regulation (food safety, consumer information, protectionism, etc.) does not matter for regulations that limit the ability of developing countries to trade. Regardless of the validity of the reason for standards and the beneficiaries, trade policies that limit the ability of producers to benefit from trade lower growth and development of the exporting countries, particularly exporters in a developing country. Over time, however, the intent of the regulation can matter. Food safety regulations, created to prevent the trade of products with pathogens or excessive chemical residues, will shore up markets and potentially enhance welfare or the

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<sup>1</sup> I use the terms “standards” and “regulations” interchangeably in this chapter. However, in some texts authors may use the term “standard” to suggest a voluntary rule and a “regulation” as obligatory.

demand for the product. Multiple researchers make the case that a food safety standard can lead to more stringent standards, but other factors can affect the outcome such as the preferences of consumers of risk (Beghin et al. 2013; Disdier and Marette 2010; Fulponi 2006; Henson 2007; Swinnen et al. 2015; and van Tongeren et al. 2010). Similarly, a label that reflects production practices that are consistent with consumer values or ideas concerning organics or animal welfare may also support consumption of the product and yield premiums for the producers. Further, these policies can enhance the productive capacities of the developing country producers by rationalizing production, enhancing efficiencies, or contributing to producer welfare. In these cases, we see “win–win” regulations—consumers, not just those in developed countries, obtain their consumption goals, and producers in exporting countries attain the economic benefit of selling products in valuable global markets.

Beyond the idea of trading up and win–win regulations, much of the analysis in the trade and development literature have tended to look at regulations imposed by governments as either beneficial to the consumers in the importing country or harmful to the producers in the exporting country. However, a tertiary literature suggests that the effects depend on a number of mitigating factors. Further, a burgeoning literature on private standards follows a similar pattern. Thus, a critical assessment of the regulatory environment may prompt a careful weighting of the goals of regulations in light of the efforts to use trade as a means to achieve the SDGs.

### **13.3 Labels and Food Safety Defined**

To begin this discussion, the parameters for this chapter of labels and food safety need explanation. Jansen and de Faria (2002) argue that labels fall into one of two functional areas: (i) to give information on aspects of the product, or (ii) to provide a minimum standard of quality of the product. An example of information labels is consumer-facing labels that indicate the nutrients and ingredients in a product. These labels are usually incontrovertible and required. Following the second label type, a product is (or is not) organic, dolphin-safe, ecologically friendly, etc. by the presence (or lack) of the label. The presence of these labels may reflect gradients of compliance or adherence. For example, organic labeling in the United States indicates “100% organic,” “organic,” or “Made with organic [a named specific ingredient]” (USDA Agricultural Marketing Service 2016). Typically, though, these quality labels are binary: the product is certified “Rainforest Alliance” or not.

These quality labels may not be required, but the presence of these labels suggests a range of qualities in the marketplace.

Safety, in the realm of food, is not readily detectable to the consumer. As a credence trait, consumers assume the safety of the product, and that assumption rests upon the regulatory institutions within and between countries. The safety of the product is often determined through science. However, societies often observe the science of food safety through the cultural lens of the permissible levels of risk and uncertainty, as seen in the case of genetically modified organisms globally. Food safety and labeling often do not intersect because products have labels, which state that one product is safe and another is unsafe. The case of genetically modified products is one where the lines of safety, quality, and consumers' right to know begin to blur.

In cases like these, controversies abound, but as suggested earlier, nations have a cultural understanding of safety and the extent of acceptable safety. Similarly, different consumers demand differing levels of production methods, desired qualities based on values, even the requisite amount of information, as seen with labels. These differences and the attendant ambiguity of the means and motivations for safety and information lead to conflicts in international trade. The lack of careful consideration and transnational dialogue can limit the ability of countries to gain the most from international trade.

### **13.4 World Trade Organization, Labels, and Food Safety**

Under the WTO, the Agreement on Technical Barriers to Trade (TBT Agreement) and the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) are the two mechanisms that provide the rules for nations to implement labels and food safety regulations in trade. Before these agreements, the General Agreement on Tariffs and Trade (GATT) had limited scope to address issues related to labels. Article XI indicates that limits to most favored nations are possible for traded goods to follow standards and regulations. Article XX(b) states that measures are permissible to protect the health and life of humans, animals, and plants as long as the measures are not veiled attempts of protectionism. At the end of the Tokyo Round in 1979, GATT member countries agreed to the TBT Agreement, which established principles to guide the implementation of labels and other trade restrictions for the protection of health and life and the broader environment (Wilson 2003). Member countries revised the TBT Agreement at the end of the Uruguay Round in 1994.

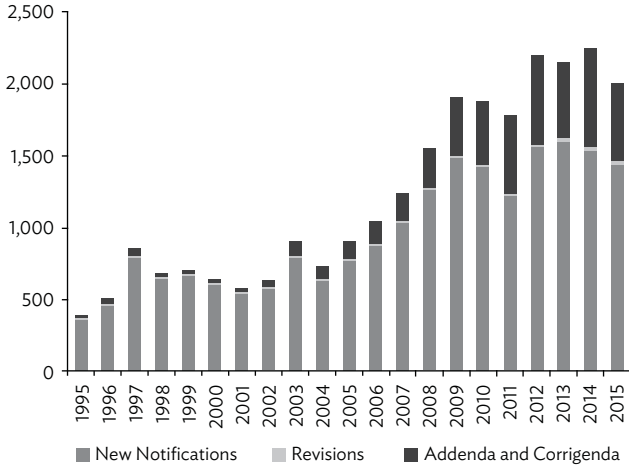
The advent of the SPS Agreement coincides with the Agreement on Agriculture at the conclusion of the 1994 Uruguay Round. The SPS Agreement builds on Article XX(b) of the GATT and the TBT Agreement by addressing specifically protection of humans and animals from food-borne illness and other harmful substances found in food or feed. Further, the SPS Agreement extends protection from the spread of disease, pests, or organisms that could spread such diseases or pests. Based on the science of risk assessment, nations have the freedom “to provide the level of health protection it deems appropriate, but to ensure that these sovereign rights are not misused for protectionist purposes and do not result in unnecessary barriers to trade” (World Trade Organization 1998).

To help promote trade, the TBT Agreement and the SPS Agreement share some common principles of harmonization, equivalence, and transparency. Harmonization is to encourage nations to adopt internationally common standards. To this effect, the agreements recognize explicitly international standard-setting organizations such as Codex Alimentarius for food safety; International Office of Epizootics for animal health; International Plant Protection Convention for plant health; and International Organization of Standards for standards across all products. Equivalence is the recognition that different policies may achieve the same outcome; thus, trading partners should recognize and accept each other’s regulations. Transparency encourages nations to notify new policies and to allow for public review of the policies.

### **13.5 The Evolution of the Technical Barriers to Trade Agreement and the Application of Sanitary and Phytosanitary Measures**

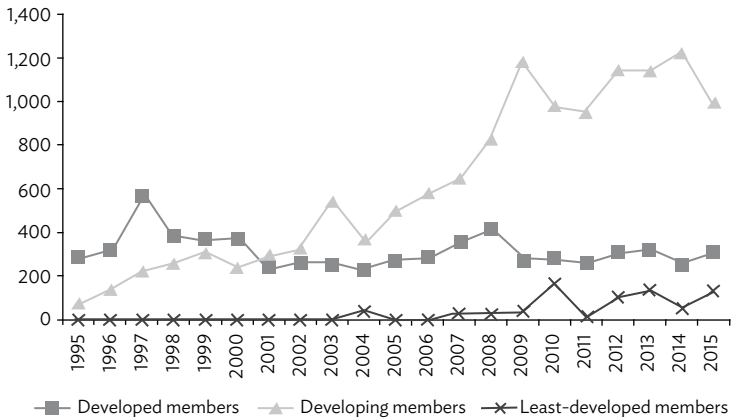
These principles should help nations overcome the trade restrictiveness of NTBs. Of the principles that can be observed, the number of notifications reported over time and by country type can serve as a proxy measure of transparency. As seen in Figure 13.1, the number of TBT notifications increased from nearly 500 in 1995 to over 2,000 in 2014. This fourfold increase may be a sign of greater protectionism. Walkenhorst (2003), however, argues that increases in the number of notifications may reflect an increase in trade or increased awareness by countries of the importance of transparency. The process of notifying new and revised TBTs encourages discussion of the proposed TBTs and gives trade partners the opportunity to discuss and potentially encourage the adjustment of the TBTs.

**Figure 13.1 Total Technical Barriers to Trade Notifications, 1995-2015**



Source: World Trade Organization (2016).

**Figure 13.2 New Notifications by Development Status, 1995-2015**



Source: World Trade Organization (2016).

As seen in Figure 13.2, developed countries made the most notifications from 1995 to 2000. After that period, developing countries notified over three times as many TBT notifications as developed countries. Developed countries kept a steady flow of notifications, at around 200 notifications a year. Least developed members of the WTO have been slow to contribute to the notifications. The great expansion of notifications by developing countries suggests a counter-narrative to the one of developed countries imposing NTBs on developing countries. However, from 1995 to 2015, the top-five notifying countries in order are the United States, Brazil, the European Union, the People's Republic of China, and Israel (World Trade Organization 2016). Of course, these data only reflect those countries that notify. Underreporting is possible. Nevertheless, the implication of these data is that, on a per country basis, developed countries generate the largest number of new TBTs, and the large number of developing countries, which provide fewer TBT notifications per country, is the reason for the substantial increase in TBTs.

Another important measure of the effects of TBTs on trade is the number of disputes initiated at the WTO. As seen in Table 13.1, in the first half of the data set, countries brought 33 cases before the Dispute Settlement Panel. That number fell by 42.4% in the second half of the

**Table 13.1 Technical Barriers to Trade and Sanitary and Phytosanitary Disputes Raised at the World Trade Organization**

Dispute	Year	Number of Disputes Raised	Developing Country Complainant and Developing Country Respondent	Developing Country Complainant and Developed Country Respondent	Developed Country Complainant and Developing Country Respondent	Developed Country Complainant and Developed Country Respondent
			%			
TBT	1995–2005	33	6.06	27.27	24.24	42.42
	2006–2016	19	21.05	47.37	5.26	26.32
SPS	1995–2005	30	10.00	16.67	23.33	50.00
	2006–2016	14	14.29	35.71	28.57	21.43

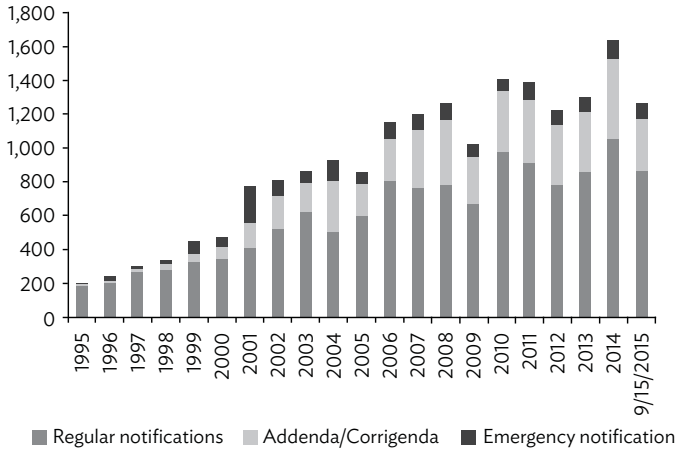
SPS = sanitary and phytosanitary, TBT = technical barriers to trade.

Source: Author.

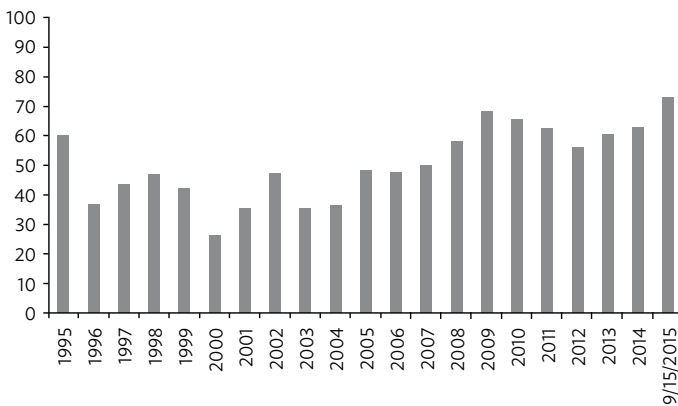
data set. The high number of disputes brought in the first half could be the result of the revision of the TBT Agreement in 1994, and nations perceived that they had stronger grounds to bring a case against another WTO member. Another explanation is that member countries have resolved many core differences, and the principle of transparency has improved communication so that fewer disputes occurred. In support of this point is the decline in the number of disputes. That decline coupled with the increase in the number of notifications suggests that the transparency and dialogue may have lowered possible conflicts from TBTs.

An important change occurred in the relative share of disputes brought before the Dispute Settlement Panel from developing countries as compared with developed countries. From 1995 to 2005, developing countries brought nearly 33% of the TBT disputes, and developed countries brought nearly 66% of the disputes. This relationship inverted in the second half of the data. From 2006 to 2016, developing countries brought over 68% of TBT disputes, and developed countries brought only 32% of the disputes. The reversal in relative shares suggests that initially developed countries used the mechanism to address long-standing conflicts. The increase in the share of developing countries bringing disputes suggests a shift in focus of developing countries and commitment to address challenges that they faced particularly from developed countries. These findings suggest that the WTO created a path for countries to identify and resolve TBT issues. While TBT issues such as labels have not disappeared, the facility in the WTO to discuss and resolve trade conflicts may have been beneficial for member states.

The evolution of SPS is similar to TBT. Since its inception, the number of SPS notifications increased from 200 in 1995 to over 1,600 in 2014 (see Figure 13.3). Beginning in 2008, developing countries contributed over 50% of SPS notifications (see Figure 13.4). Similar to the TBT notifications, the increase in SPS notifications is associated with a decline in the number of SPS disputes from 1995–2005 to 2006–2016. Thus, WTO members may not find the new SPS regulations overly burdensome. The relative share of SPS disputes increased for developing countries from 26% to nearly 50%. These findings suggest that SPS and TBT regulations are not growing in restrictiveness and potentially are weakening. The concern that developed countries are using mechanisms such as the TBT and SPS agreements as tools of protectionism against developing countries does not seem to hold. Collectively, the previously discussed standards that fall under the aegis of the SPS and the TBT agreements are public standards as national governments create and enforce these standards.

**Figure 13.3 Notifications Submitted per Year**

Source: World Trade Organization (2015).

**Figure 13.4 Share of Total Notifications Submitted by Developing Country Members (including Least Developed Countries)(%)**

Source: World Trade Organization (2015).



## 13.6 Public Standards

A number of studies have suggested that these public standards may have a negative effect on trade. Two of the earliest studies of the effects of regulations, specifically food safety, on developing countries center on peanuts and aflatoxin (Otsuki, Wilson, and Sewadeh 2001a; Otsuki, Wilson, and Sewadeh 2001b). This literature prompted a number of studies that use a similar method—the gravity model<sup>2</sup> (Czubala, Shepherd, and Wilson 2009; Disdier, Fontagne, and Mimouni 2008; Disdier and Fontagne 2009; Disdier and Marette 2010; Drogue and DeMaria 2012; Shepherd 2007; Shepherd and Wilson 2013; Tran, Wilson, and Anders 2012; Tran, Nguyen, and Wilson 2014; Wieck, Schluter, and Britz 2012; Wilson and Otsuki 2003; and Xiong and Beghin 2014, among others). Much of this literature suggests that rising standards lower the value of trade, and that developing countries, in particular, are hurt by these standards. However, the later literature began to question the negative effect of standards. In particular, researchers using new techniques to address zero trade, distinguish between intensive and extensive margins, and address other technical issues (Helpman, Melitz, and Rubinstein 2008; Santos Silva and Tenreyro 2006). The findings based on the new techniques began to show that new standards may have positive or no effect (Shepherd and Wilson 2013; Xiong and Beghin 2014) or that even if standards have negative effects the overall effect in terms of welfare could be positive (Disdier and Marette 2010). Further, researchers found evidence that some countries were able to use the SPS regulations as a competitive tool and a way to reap the higher returns associated with safer products (Henson and Jaffee 2008; Neeliah, Neeliah, and Goburdhun 2013).

## 13.7 Private Standards

Concern has grown in the literature and policy circles about the presence of private standards, such as those created by retailers like the British Retail Consortium and EurepGAP, which became GlobalGAP (Good Agricultural Practices), and civil society organizations such as Marine Stewardship Council, among others. Fulponi (2006) argues that private groups are leading forces shaping international standards on food ethics, quality, and safety. Many researchers suggest that the standards from

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<sup>2</sup> Some of these papers assess the effects of public and private standards, which I discuss in the next section.

private groups can be more stringent than the standards that national governments set (Fulponi 2006; Henson 2007; Henson and Jaffee 2008; Swinnen et al. 2015). The reason for the increased stringency is to establish or extend the reputation of the firms to gain a competitive edge over other firms (Fulponi 2006; Swinnen et al. 2015).

With the higher standards, producers face higher compliance costs. As a result, researchers have suggested that private standards may create market distortions and leave small-scale producers in developing countries out of profitable markets. If the standards ultimately encourage cost reductions managed through economies of scale, they can favor larger exporters and producers (Henson 2007; Tran et al. 2013). Thus, these smaller firms may exit the supply chain; however, the private standards may incentivize improvements in production practices (Fulponi 2006; Swinnen et al. 2015). During the development of this literature, Henson (2007) suggested the need for empirical research of the effects of private standards.

As noted by Minten et al. (2009) and Maertens and Swinnen (2009), a number of studies suggested that development of local and international retail markets may harm small-scale producers (Delgado 1999; Key and Runsten 1999; Kirsten and Sartorius 2002; Minot and Ngigi 2010; Reardon and Swinnen 2004; Reardon et al. 2003; Weatherspoon and Reardon 2003). However, a body of literature based on a series of empirical case studies, has begun to show that the private standards are not harmful but may in fact contribute to the development process.

From household level surveys of nearly 10,000 vegetable farmers in Madagascar, Minten et al. (2009) provide evidence that private standards improved the well-being of participating farmers. Under the contracts with Europe-based supermarkets, farmers had to meet a complex set of quality and phytosanitary standards. In the analysis, researchers found that farmers had higher welfare, more stable incomes, and shorter lean times. Further, these farmers gained from the contracts via technology spillovers and better resource management. Maertens and Swinnen (2009) and, in a follow-up paper, Colen et al. (2012) critique the literature of the time for failing to evaluate the effects of high-standard trade on poverty and welfare. Evaluating a group of vegetable farmers in Senegal, Maertens, and Swinnen (2009) find that participating in contracts that required adherence to marketing standards, SPS measures, hygiene standards, and traceability standards, these farmers increased exports and experienced higher wages. Through simulations, they show that poverty would decline. Colen et al. (2012) evaluated the effect of the participation of Senegal's farmers in GlobalGAP. They also find increased wages and longer contracts for poor household members. In both

studies, they find that the structure of production changed: a movement from smallholder farmers to large, more industrial plantations, which is a concern raised in the earlier literature.

Henson (2007) acknowledges the restructuring of production that standards could prompt. However, Colen, Maertens, and Swinnen (2012) and Maertens and Swinnen (2009) suggest that the movement away from smallholder production to hired labor on larger industrial farms is part of the gains for producers. As standards evolve and markets change, will these new relationships hold into the future? Another area of concern centers on who has voice and power in the global value chains under standards. Bergleiter and Meisch (2015) suggest that shared values between consumers and producers can lower the costs of standard setting and implementation. Bush and Oosterveer (2015) assert that private standards, for example, from the Marine Stewardship Council, not only affect markets and trade, but they may alter the relationship of the actors in the value chain. These dynamics may alter the standard, which ultimately affects producers and consumers. Similarly, Ponte (2008) suggests that politics and local conditions may mediate standard setting and implementation beyond the dictates of science. The importance of who has voice and power in the value chain for setting and controlling standards rests on the fact that these private standards are outside of the political process. Producers have no recourse for addressing concerns about private standards, as is the case for public standards. To this point, Henson (2007) asks, “Should public authorities concede the governance of global supply chains to private standards or attempt to rein these in?”

## 13.8 Conclusion

Standards have an effect on trade. The evolution of literature suggests an ever changing perception of what these standards are and the consequences of labels and food safety guidelines. Early in the implementation of standards, national governments were the main actors and contributors to these standards. Member countries of the WTO had the ability to raise the issue of the appropriateness of these standards. However, a new wave of standards has moved the rule setting out of the hands of governments, effectively out of the WTO and national (and supra-national) governments, and into the hands of private firms and nongovernment organizations. This second wave of standards calls into question who has the ability to effect change in the value chain and the standards that intervene in the value chains.

One interpretation of the literature and policy discussion around standards is that standards will interrupt trade and harm producers and exporters in developing countries. Much of the early evidence from the empirical trade literature provides support that the standards lower trade values. Nevertheless, a new literature finds mixed results, suggesting that standards may have no effect on or even increase trade. Further, the development literature provides evidence from case studies that standards are contributing to economic growth. In contrast, the literature on global value chains calls into question not the trade effects of the standards in the short run; rather, the literature critiques the power relationships between actors along the value chain with implications that these relationships may shape future development and consumer well-being.

The upshot of this chapter is that trade can enhance economic growth and development. Standards, such as labels and food safety regulations, may contribute to or hamper this growth, which affects the capacity to attain the relevant SDGs as no consensus holds for the effects of standards. Part of the reason for the differences in the evaluation is differences in methods, products under consideration, countries evaluated, and outcome measures. Despite these differences and the limited scope for generalizations or direct comparisons, this literature does provide a frame to evaluate the effects of standards on the development process. Thus, future analysts and governments can do precise evaluation of industries, standards under review, outcome measures, and power relationships to determine the effects of standards on trade and development.

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\* The Asian Development Bank refers to “Vietnam” as Viet Nam.

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PART III

# Education and Health

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# 14

## Trade in Education Services and the SDGs

*Aik Hoe Lim, Pamela Apaza, and Alin Horj*

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### 14.1 Introduction

Trade in education services can play a key role toward achieving the Sustainable Development Goals (SDGs) of ensuring inclusive and quality education and promoting lifelong learning, which in turn is linked to other goals on reducing poverty and promoting economic growth and decent work. The SDGs put in focus the importance of balancing, on the one hand, universal access to and quality in education and, on the other, the need for open markets to ensure more investment and education opportunities. Education is also an overarching goal, which is included in the SDGs on health, growth, and employment; sustainable consumption and production; and climate change. While the Millennium Development Goals mentioned primary education only, the SDGs refer also to technical, vocational, and tertiary education, including university (referred to as “higher education” in this paper). Although trade has the potential to provide more education opportunities at all levels, this paper focuses on higher education. This is an area where international trade can contribute the most, given the important structural changes that have taken place globally.

The first part of the chapter focuses on the main trends in the sector and how these have spurred reforms in education systems, especially the provision of higher education services. These factors include demand-side factors (e.g., demographic changes), supply-side factors (e.g., reforms in government funding and changes in investment flows), as well as other factors such as technological developments and new global patterns of production. Many developing countries are experiencing a youth explosion and facing the challenge of integrating their young into the labor market. There is also an increasing need for governments to ensure that local skilled labor becomes more competitive in today’s

knowledge economy and better integrated into global value chains (GVCs). In addressing these challenges, education is often cited as a key factor but many governments also face significant budgetary constraints. As a result, governments are using a mix of policies allowing private education services to operate alongside publicly provided services. Together with these policies, foreign providers are increasingly viewed as prospective partners.

The second part of the chapter examines the opportunities and challenges provided by trade agreements in spurring reforms aimed at liberalizing trade in higher education, while safeguarding domestic policy objectives. It focuses on the General Agreement on Trade in Services (GATS) of the World Trade Organization (WTO), but also includes recent trends in preferential trade agreements (PTAs) to provide an overview of the international framework governing trade in educational services. New disciplines on e-commerce relevant to online education found in the latest PTAs, which may encourage similar initiatives in the WTO, are also examined. International trade agreements can help countries attract foreign providers of education services by reducing barriers to entry, ensuring a level playing field among providers, and guaranteeing a transparent and predictable regulatory environment. GATS can also support and complement initiatives aimed at addressing national and global regulatory challenges such as safeguarding quality and equity in education, thereby fostering coherence among different policy objectives and contributing toward the SDGs.

The chapter concludes with some observations on addressing the challenges and opportunities posed by opening trade in education services in contributing to the SDGs and the potential role of GATS.

## **14.2 Main Drivers and Trends in Education Services**

While providing education remains to a large extent the responsibility of governments, recent developments have paved the way for important reforms in the higher education sector. At the basic level (primary and secondary education), the role of governments as both providers and regulators continues to be more prominent, with a limited role for international trade. The growing importance of international trade in higher education services is characterized by demand-side factors (e.g., demographic changes), supply-side factors (e.g., reforms in government funding and changes in foreign direct investment [FDI] flows). Other factors include technological developments and the rise of GVCs. As a

country's comparative advantage is also determined by the availability of skilled human capital (Bougheas, Kneller, and Riezman 2001), international trade in education can provide a useful tool for developing countries to expand their educated workforce and better integrate this workforce into GVCs. All these factors have required governments to use a mix of policies to attain education goals. These policies have introduced more space for private education services, including foreign ones, to operate alongside publicly provided education services.

### **14.2.1 Demographic Changes and Other Factors Shaping the Demand for Higher Education Services**

The demand for higher education has expanded rapidly for several reasons. On the one hand, many developing countries have experienced a youth explosion over recent years and face the challenge of integrating large youth populations into labor markets (KPMG International 2013). Having a pool of qualified individuals that can contribute to the overall competitiveness of the economy is crucial for many economies, particularly in the developing world. For instance, 11 million young Africans under the age of 25 are expected to join the labor market every year for the next 10 years (KPMG International 2013). On the other hand, some developed economies are faced with a rapidly aging population due to longevity and lower fertility rates (OECD 2008). Other factors explaining the increase of global demand for higher education services include a rapidly growing middle class especially in some developing and emerging economies, and progress at the secondary level, which have resulted in an increased number of candidates for higher education.

The large and ever increasing youth population in many developing countries has put pressure on governments to meet the demand for education. For example, the number of university-age students across Africa is predicted to double from 200 million to 400 million by 2045 (University of Oxford 2015). A predominantly young population could be a boon for economic growth, but only if it has the knowledge and skills that would allow it to be integrated into the labor market. Countries experiencing a rapidly aging population face the contrary situation of labor shortages in certain areas coupled with overcapacity in higher education services. To deal with excess supply issues, some higher education institutions have sought to attract foreign students. For instance, demographic changes have prompted numerous member countries of the Organisation for Economic Co-operation and Development (OECD) to reform their higher education systems to allow institutions to attract more foreign students (University of Oxford 2015). An example is Japan, which is aging faster than any other economy. Its Global 30 Project aims

to increase the number of foreign students in Japan to 300,000 by 2020 (Burgess et al. 2010). The possibility of students going abroad to obtain high-quality education is directly linked to the issue of “brain drain,” as there is often a risk that students may remain abroad to work and stay past the duration of their courses. This issue, which has been given attention in policy circles, will be addressed when examining the implications of the different forms of delivery of trade in education services from the perspective of SDGs.

There is also a market incentive for secondary graduates to pursue higher education studies. According to an OECD study, adults who attain tertiary education are more likely to be employed and earn more than adults without tertiary education (OECD 2015). Progress at the secondary level has also resulted in an increased number of candidates for higher education. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), secondary school enrollment grew at a faster rate than the school-age population between 1970 and 2009 (UNESCO 2011). While enrollment worldwide increased by an average annual rate of 2.6%, the targeted school-age population grew by 1.4% only (UNESCO 2011). Globally, the secondary gross enrollment ratio<sup>1</sup> rose from 43% to 68% between 1970 and 2009, although the situation varies across regions.<sup>2</sup>

Another demand-side factor is the growth of the middle class, especially in Asia, the largest regional source of international students. This growth has given rise not only to a higher demand for more quantity, but also for good quality higher education. The periods of economic growth in East and Southeast Asia generated a rapidly expanding middle class at a time when globalization, communications, and business were augmenting the value of foreign degrees (OECD 2004). Significant unmet demand among middle class families has been a major driver of foreign education in countries such as the People’s Republic of China (PRC), Thailand, and Malaysia (OECD 2004). This has resulted not only in the movement of Asian students to OECD countries, but also in the expansion of educational programs and campuses into Asia.

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<sup>1</sup> The gross enrollment ratio is the ratio of total enrollment, irrespective of age, to the targeted population. It provides a measure of the capacity of education systems.

<sup>2</sup> While in South and West Asia total enrollment at the secondary level increased from 26 million to 136 million, in Africa it increased from 53 million to 62 million only (UNESCO 2011).

## 14.2.2 Reforms in Government Funding and Growth of Private Education Provision

Traditionally, in many countries, the market had no major influence on higher education as universities were mainly created and subsidized by the state (Kwiek 2002). However, in recent decades, the role of private sources of funding has become increasingly prominent. Today, 30% of funding for tertiary institutions arises from private sources, while the average share of public funding for tertiary institutions in OECD countries decreased from 69% in 2000 to 64% in 2012 (Kwiek 2002). Tertiary education spending accounts for around 1.5% of gross domestic product (GDP) on average across OECD countries, although some countries including Canada, Chile, the Republic of Korea, and the United States (US) spend between 2.3% and 2.8% of their GDP on tertiary education. But elsewhere, the picture is mixed. In Liberia, tertiary education expenditure was only 0.10% of GDP in 2012, while in Ghana it exceeded 1.10% of GDP. Other countries with large young populations such as Indonesia and Pakistan also have relatively low public funding for higher education of around 0.5% of GDP.<sup>3</sup> The gap between limited public supply and unmet demand has created market opportunities for private education institutions.

Globally, one in three higher education students is in the private sector, while in Europe the figure is one in seven (The Economist 2015). In some countries like Finland, Austria, and Iceland, the private sector represents no more than 10% of total tertiary enrollments, but for others such as Indonesia, the Netherlands, Mexico, and Italy, it is about 30%. In Asia and the Pacific economies such as the Republic of Korea and Japan, as well as in Chile, the US, Colombia, and Australia, the share of private education expense exceeds 55% of the total expense for education (Figure 14.1). Private spending on higher education has also increased significantly in countries that have traditionally relied on public education, such as Hungary (+114%) and Turkey (+97%), as well as in countries where private education has traditionally played an important role in the education system, such as the United Kingdom (UK) (+53.7%) and the US (+13.3%). Conversely, the share of private spending in education decreased in Austria (−44%), Slovenia (−40%), Poland (−25.9%), and Chile (−22%).

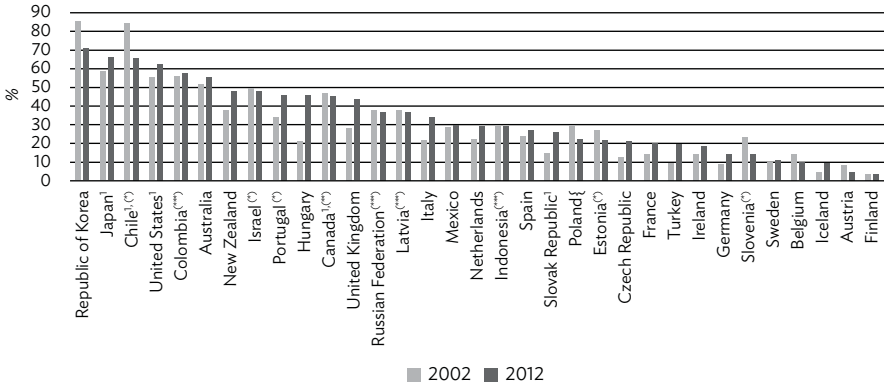
Private education has also been expanding strongly in Africa, where the demand for higher education has been increasing in the last years.

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<sup>3</sup> UNESCO Institute for Statistics. Expenditure on education as % of GDP (from government sources). <http://data.uis.unesco.org/?queryid=181>



**Figure 14.1 Share of Private Expenditure on Tertiary Educational Institutions in Selected Economies (2002 and 2012)**



1 = Post-secondary non-tertiary included in both upper secondary and tertiary education.

(\*) = Year of reference 2006 and 2012.

(\*\*) = Year of reference 2005 and 2012.

(\*\*\*) = Year of reference 2011 and 2012.

Source: Organisation for Economic Co-operation and Development. Education at a Glance Indicators, 2002, 2005, 2006, 2011, 2012.

For example, in sub-Saharan Africa, the growth of public universities has been outpaced by the rate of growth in the private sector in recent decades. Between 1990 and 2007, the number of private universities and colleges, including for-profit and not-for-profit institutions, increased from 24 to more than 468. More than 53% are found in Francophone countries such as Senegal (41 institutions) and the Democratic Republic of Congo (39), while 34% are in Anglophone countries, particularly in South Africa where there are 79 private universities (Havergal 2015). Data on private education is however not systematically collected for many African countries.

The growth of private education in Africa has to be kept in context. The majority of private institutions tend to be small and have fewer than 1,000 students. They cannot be easily compared with public universities, which still remain the main provider of higher education. Tuition fee levels in public universities are very low, while those in private sector institutions can amount to several multiples of average incomes. In Tanzania, for example, they can reach \$8,000 per year as compared with its GDP per capita of only \$998.

One of the main reasons for the growth of private education in Africa is that courses offered by the private sector are tailored to the demands

of industries in areas such as business management, accounting, computer sciences, and economics (Havergal 2015). Many private universities have introduced curriculum innovations aimed at the local market, such as entrepreneurship training. At the same time, the quality of many private universities has been a source of concern as they tend to offer courses that require limited infrastructure investment and are cheaper to deliver. According to the World Bank, this trend of rising private universities has to be accompanied by higher-quality education to provide the knowledge and skills needed to boost competitiveness and growth of African nations (Experton and Fevre 2010).

A related trend has been the increasing involvement of public universities in other revenue-generating activities. Besides tuition fees, universities also generate income from research funds, as well as consulting and research fees (Lim and Saner 2011). This has given rise to a new generation of government-dependent institutions with commercial linkages,<sup>4</sup> but also greater competition for higher fee-paying international students, as they do not receive tuition subsidies. Such policies have been adopted by Australia, New Zealand, the US, and the UK. In this respect, some exporting countries of higher education services have adopted nonsubsidized tuition fees for international students. High tuition fees do not necessarily discourage prospective international students, as there is a strong perception that it correlates with higher quality and that potential returns will make the investment worthwhile. This has led several countries to initiate policies to attract more international students on a revenue-generating basis and to make international education an explicit part of their socioeconomic strategy (OECD 2015).

### 14.2.3 Changes in Foreign Direct Investment Flows

The rising demand for higher education in countries with limited educational opportunities, especially in emerging markets, has led to more FDI from US, Australian, and British universities. There are a wide variety of models with some countries investing in higher education in the form of wholly owned international branch campuses (IBCs) or in joint ventures with local education institutions, either for profit or for nonprofit. There is however very little data on FDI in education, as this is not a category for which statistics are systematically kept. Nevertheless, FDI can have an important impact on both the supply of and demand for education. In terms of supply, while it is not possible to

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<sup>4</sup> OECD (2009a) defines a government-dependent private institution as one where more than 50% of funding comes from government sources. A fully independent private institution receives less than 50%.

disaggregate education services from FDI flows, there are two factors which are important to consider. First, about two-thirds of investment is in the services sector. Second, the global FDI stock is very large and jumped from \$636 billion in 1980 to \$27 trillion in 2014 (UNCTAD 2015). Taking into account both of these factors, even if FDI in education services might be a small percentage of total flows, its impact could still be very significant.

FDI may not only bring in capital, technology, and technical and managerial skills, but may also contribute to capital accumulation by increasing the demand for skilled labor. There is also evidence pointing toward the availability of skilled labor in the host country as a factor in FDI flows. The availability of local skills has become an important pull factor of FDI in the process of globalization since the 1990s (Mughal and Vechiu 2009). For instance, there is a strong correlation between where US universities are located and where US FDI is headed. But depending on the type of FDI, the impact on economic growth and human capital accumulation is different (Beugelsdijk, Smeets, and Zwinkels 2008). Horizontal rather than vertical FDI seeks to enter and gain market shares in a new market in the host country and they compete directly with one another and local firms. It also contributes to the host country's technological upgrading and human capital accumulation. Horizontal FDI currently accounts for a larger share of research and development (R&D) activities, which are human capital intensive and have positive spillovers to the local economy (UNCTAD Secretariat 2004). A strong and positive relationship was found between FDI and human capital proxied by the level of schooling in 38 developing countries during 1975–2000 (Nunnenkamp 2002). In general, R&D projects in developing countries have boosted skilled labor demand and increased participation in higher education (Mughal and Vechiu 2009).

#### **14.2.4 New Information and Communication Technologies**

The advent of new information and communication technologies (ICT) has significantly influenced the way providers deliver education services and students learn around the world. Innovations in ICT have made possible the emergence of new business models in education, such as distance learning or blended courses that combine traditional and online instruction. They have the potential to considerably reduce the delivery cost of education services regardless of location of students. By aggregating the demand globally, online courses attract student numbers, which even the largest universities cannot service in traditional settings (Becker–Lindenthal 2015). They can also be used to

upskill workers in specific areas including new technologies (The Earth Institute, Columbia University; Ericsson 2016). In addition, ICT can provide researchers with new tools to facilitate data collection, analysis, and dissemination (University of Oxford 2015).

A main challenge, however, is ensuring that less-developed countries have the broadband infrastructure required to benefit from the use of new ICT in education. Internet access has grown substantially and, in 2015, 3.2 billion people were online (University of Oxford 2015). However, only 1 in 10 least developed countries had internet access. Another challenge is making sure that education institutions and students can make use of ICT in education. A number of priority areas for governments include connecting universities to the internet and mobile broadband, as well as training professors on how to integrate ICT tools into teaching (University of Oxford 2015).

### **14.2.5 Rise of Global Value Chains and the Global Knowledge Economy**

Many developing countries are rapidly moving toward high value-added manufacturing and knowledge intensive industries that are structured around global value chains (GVCs), which require more technical and vocational education. With GVCs, production is split into different phases with various intermediate goods sourced both domestically and from third countries. Currently, about 60% of global trade accounting for more than \$20 trillion consists of trade in intermediate goods and services that are incorporated at various stages into the production process before final consumption (UNCTAD 2013). The rise of GVCs has produced a new “trade-investment-services-know-how nexus,” a movement of capital and ideas, and greater demand for services to coordinate the dispersed production and distribution of goods and services (OECD 2014). For instance, much of the value of the product does not only come from manufacturing, but also from associated services such as software, design, and marketing.

Trade in education services can allow countries to further participate in GVCs and develop the skills needed to provide various services, including business services, accountancy, design, and R&D. There is a directly proportional relationship between the growth rate of knowledge and the growth rate of the economy. Hence, proper education policies can be an important factor in developing such supply-side capacity. It is important and timely to do a thorough analysis of factors and policy areas where additional policy attention could be directed to secure entry and to expand and upgrade participation within GVCs. Figure 14.2 shows the recommendations

**Figure 14.2 Key Education Policy Priority Areas for Supporting Participation in Global Value Chains**

Security entry to GVCs	Expanding participation in GVCs	Upgrading within GVCs and creating new GVCs
<ul style="list-style-type: none"> <li>• hard infrastructure</li> <li>• domestic regulatory systems</li> <li>• trade and investment liberalization</li> <li>• trade facilitation</li> </ul>	<ul style="list-style-type: none"> <li>• soft infrastructure: education and training to increase absorptive capacity of firms and workers</li> <li>• ICT development</li> </ul>	<ul style="list-style-type: none"> <li>• building innovative, human, and firm capital</li> </ul>

GVC = global value chain, ICT = information and communication technology.  
 Source: United Nations Economic and Social Commission for Asia and the Pacific. 2015. Asia-Pacific Trade and Investment Report 2015: Supporting Participation in Value Chains. Bangkok.

related to higher education grouped under three objectives. The recommendations are not exhaustive and would have to fit country-specific circumstances.

For small and low-income countries to secure entry to GVCs, they need to upgrade their physical infrastructure, undertake domestic regulatory reforms, and establish a supportive and coherent trade and investment framework. But countries also need education and training to increase the absorptive capacity of firms and workers, as well as improved education and ICT. For both domestic and foreign value chains, local producers are often small and medium-sized enterprises that account for the majority of industrial employment. They are reportedly constrained in their ability to enter GVCs both in developed and developing countries due to a lack of adequate skills in the workforce (UNCTAD 2010). This is often delayed and inadequately supplied by public training institutions (UNCTAD 2010). For low-income and developing countries to join GVCs and expand participation, developing (or importing) the right education and training for their workforce would increase the capacity of firms to deliver services and intermediate goods.

In particular, to facilitate participation in GVCs, governments may need to focus more on technical and vocational education, which can improve the performance of specific tasks. In a survey carried out by the United Nations Conference on Trade and Development (UNCTAD) regarding SMEs' participation in GVCs, the majority of

case studies revealed a delayed and inadequate response of public training institutions to new skills development and in some cases even to basic skills needs (UNCTAD 2010). A technically skilled labor force is often central to ensuring standards compliance, including the tracing of foodstuffs, or ensuring that each product run in the factory meets quality requirements. Without adequate human capital, developing countries often face bottlenecks in filling key technical positions to meet the process of upgrading requirements of GVCs (OECD 2014).

As more countries secure entry to GVCs, expanding and upgrading participation has become one of the key, if not the most important, factors determining future economic growth and prospects for sustainable development. The role of tertiary education in this area is significant. For instance, in addition to technical competencies, policies could include the provision of education and training in higher-level skills, such as languages, and professional qualification (ESCAP 2014). Participation in GVCs is a dynamic process, and to stay competitive continual investment in developing human and firm capital is needed. It is not sufficient to acquire new machines, for example, for technology transfer to be effective and sustainable; both workers and local engineers need to have the capacity to absorb new techniques and adapt them to domestic conditions (ESCAP 2014). Finally, as a new sector emerges, it is important to create advanced and specialized skills that would not distort the market and damage the internal dynamism of the private sector (UNCTAD 2010).

Once participation in GVCs is expanded, governments also need to manage the interdependencies that come with greater economic integration. In particular, the social aspects will require special attention. Enabling GVC development will increasingly require more international cooperation and coordination in education among governments. As cross-border education (CBE) can benefit both sending and receiving countries, aligning educational systems with international standards is seen widely as a key means of improving the economy's overall competitiveness.

### **14.3 Trade in Education Services and International Trade Agreements**

A wide variety of national policy frameworks exist for the provision of trade in education services. A host country's policies toward the

internationalization of higher education play a key role in determining the scope, form, and depth of transnational education (Zimny 2011). The level and form that market opening may take will rely on a variety of policy considerations. While all countries will benefit from more open trade in education services, countries may have different needs or priorities. In general, the provision of education is considered the responsibility of governments. This is particularly the case for primary and secondary schooling (also called “compulsory education”). While in most countries public and private providers of basic education services coexist, the role of international trade has been limited. This is also reflected in trade agreements, where governments have been less prone to bind commitments directed to open primary and/or secondary education to outside competition, as compared with higher education.<sup>5</sup> Nonetheless, trade liberalization of higher education services could have positive spillovers on basic education. One of the SDGs on education is the substantial increase of qualified teachers by 2030. Increasing education opportunities in the field of teaching through the different modes of delivery of higher education services could help to cope with the shortage of qualified teachers that exists at the basic level, particularly in less-developed countries. Given the importance of basic education for sustainable development, the spin-offs of opening trade in higher education for improving domestic capacity at the basic level should be considered. As explained below, GATS provides enough flexibility for governments to open markets according to their own situation.

While the trends discussed in the first section point toward the internationalization of education, the role of international trade agreements and their potential contribution toward the SDGs has barely been examined. Trade agreements can contribute in several ways. First, they can facilitate reforms aimed at opening the sector to help meet the increasing demand for higher education by reducing barriers to entry and competition. Second, they can help attract FDI and new providers of education services by ensuring a level playing field among providers as well as transparency and predictability of education regulations. Third, trade agreements can spur the accompanying regulations to help reap the benefits of opening trade in education while safeguarding national and global policy objectives such as quality and equity in education.

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<sup>5</sup> Similarly, within the context of GATS, the collective proposal presented in the WTO Doha negotiations on trade in education services focused on higher education.

### 14.3.1 Education Services and the General Agreement on Trade in Services

GATS is the only international agreement dealing with global rules for services trade including trade in education services. It aims at progressively liberalizing trade in services as a means of promoting economic growth and development.<sup>6</sup> The agreement seeks to ensure that services trade is conducted in a predictable and transparent environment, and without discrimination among services and service suppliers from different members. This is also known as the most favored nation (MFN) principle.<sup>7</sup> There is no obligation to open markets under GATS. The agreement recognizes WTO members' right to regulate the supply of services within their territories to meet national policy objectives. The combination of the GATS commitments and properly designed regulations can be used to pursue SDG-related objectives of increasing access to, quality of, and equity in education services.

#### The GATS Modes of Supply and the Different Forms of Provision of Education Services

GATS defines “trade in services” as the supply of a service through four modes of supply, which cover virtually all internationally services transactions. The internationalization of trade in educational services has resulted in a rich array of providers and ways of delivering educational services across the globe. Furthermore, advances in ICT are increasingly allowing the delivery of education services through the combination of two or more modes of supply at the same time.

Mode 1 (cross-border supply) refers to education services supplied across the border. It covers international online education, as well as other forms of delivery that usually involve foreign and domestic providers such as franchising and twinning arrangements. These forms of delivery do not require the “presence” of the foreign supplier and are becoming increasingly popular in the education sector. Mode 2 (consumption abroad) refers to the situation where the consumer (e.g., student) moves

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<sup>6</sup> See GATS Preamble, second paragraph.

<sup>7</sup> The MFN obligation applies to any measure affecting trade in services in any sector falling under GATS, irrespective of whether specific commitments have been undertaken or not. For instance, a member may have chosen not to open the sector to foreign services and services suppliers. In such a case, according to the MFN obligation, it cannot subsequently decide to open the market to providers of some members but not to others. Members could seek exceptions to the MFN obligations at the time of entry into force of the WTO Agreement (or date of accession). MFN exceptions specific to education have been listed only on three occasions.



to a foreign country to study. The majority of trade in education services falls under mode 2. Mode 3 (establishment or investment) takes place when a foreign education provider establishes a commercial presence (e.g., a campus) in another territory to supply higher education services. Mode 4 (temporary presence of natural persons) describes the situation where a natural person (e.g., teacher or academic) supplies a service in a foreign territory, for instance, as a self-employed supplier or as an employee of a foreign university established in a country. Depending on their policy objectives, governments may decide to prioritize certain modes of delivery of higher education services taking into consideration the complementarity that exists among the different modes. The next section will look at each of these modes of delivery of education services from the perspective of the SDGs.

### Higher Education Services under GATS

As mentioned above, the SDG goals in education refer to technical, vocational, and tertiary education including university, which are comprised under the term “higher education” in this paper. In the WTO Services Sectoral Classification List,<sup>8</sup> the subsector of higher education includes educational services leading to a university degree or equivalent as well as post-secondary technical and vocational education (not leading to a university degree).<sup>9</sup> Members may depart from such classification when undertaking commitments in trade in education services according to their own circumstances. This flexibility is relevant since new providers and new learning activities do not always easily fit in existing categories.<sup>10</sup> In those cases, they are recommended to be sufficiently clear in their descriptions.

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<sup>8</sup> The list is used by most WTO members for preparing their schedules of commitments in trade in services, including education services. It is based on the UN Provisional Central Product Classification List (CPC), which divides education services into five subsectors: (i) primary education; (ii) secondary education; (iii) higher education, comprising post-secondary technical and vocational education (not leading to a university degree), as well as higher education services leading to a university degree or equivalent; (iv) adult education (outside the regular education system); and (v) other education services (not elsewhere classified).

<sup>9</sup> Later reviews to the CPC include two separate categories: (i) “post-secondary not tertiary education” leading to a labor-market relevant qualification, and (ii) “tertiary education” leading to a university degree or equivalent.

<sup>10</sup> The CPC has been later revised more than once to reflect changes in the sector and the realities of the market such as the entrance of new providers. The main differences are the distinction made between tertiary and non-tertiary education (degree and non-degree “higher education”), overlap between adult education and “other education,” as well as the classification of training and non-instructional activities. See also WTO. 2010. Education Services, Background Note by the Secretariat, Council for Trade in Services, document S/C/W/313, 1 April.

The GATS scope of application is broad as it applies to all government measures “affecting trade in services” in practically all sectors, with two exclusions. The most relevant to education services relates to services supplied in the exercise of “governmental authority,” meaning any service provided “neither on a commercial basis nor in competition” with one or more services suppliers.<sup>11</sup> GATS does not however define “competition” or “commercial basis.” There is also no unified model of governmental provision of education services since national traditions and education systems differ. For some countries, the public sector is the main provider of education. In others, private education plays a very important role and both the public and private sector coexist in the delivery of education services. A similar situation exists for other services sectors that feature an important public service aspect, such as health services.<sup>12</sup>

Although the public sector is an important education service provider, this does not necessarily mean that education is a public good. Public goods in economic analysis are defined by two characteristics: (i) non-excludability, and (ii) non-rivalry in consumption. In other words, individuals cannot be effectively excluded from consuming the good, and consumption by one individual does not reduce availability to others. Education does not meet these conditions as it can be made excludable and there is rivalry in consumption. On the other hand, education has strong positive externalities and benefits accrue not only to the individual but to society at large. There are both private and public benefits from having people consume more education. This is why the sector does receive significant public investment, but at the same time the individual is often also expected to share in the costs. The exact proportion between public and private expenditure can only be determined on a case-by-case basis, and it may vary among countries and over time (UNESCO 2012). Under GATS, there is full flexibility to cater to all situations, from having no sector commitments (in which case there would not be any market access or national treatment obligations) to scheduling specific commitments with limitations inscribed. As discussed below, there are many ways by which specific commitments can be conditioned to suit national policy objectives.

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<sup>11</sup> See Article 1.3, subparagraphs (b) and (c). GATS also excludes air transport services from its scope of application. The agreement does not define the terms “commercial basis” or “competition.” Some factors that could be taken into consideration when analyzing whether educational services are provided on a commercial basis or competition may include (i) the profit or nonprofit nature of the service provided, (ii) who owns the facilities or infrastructure, and (iii) to what extent education providers receive government assistance or not.

<sup>12</sup> For a discussion of public services, see Adlung, R. 2005. Public Services and the GATS. WTO Working Paper ERSD 2005-03. Geneva: Economic Research and Statistics Division.

## GATS Flexibilities and the SDGs

One of the issues that might arise in a discussion of the SDGs is whether there is sufficient flexibility to safeguard non-trade policy objectives in education. Under GATS, much flexibility has been built into the agreement. Members determine the sectors and subsectors in which they want to grant foreign providers market access and national treatment (nondiscrimination between national and foreign services and services suppliers). These obligations are undertaken per mode of supply. This allows governments to tailor bindings according to their own situation and policy objectives.<sup>13</sup>

First, members may circumscribe the scope of their commitments based on a description of the part of the sector they want to commit. For instance, some members have limited their commitments based on the source of funding by stating that these apply to “privately funded education services,”<sup>14</sup> while others have limited commitments to “private education” only.<sup>15</sup> Such distinctions have been used because many national systems involve a mix of public and private providers, and the member wishes to clearly demarcate the activities for which market access obligations have been undertaken.<sup>16</sup> Second, even when the sector has been committed, the obligations on market access<sup>17</sup> and national treatment<sup>18</sup> can still be made subject to limitations. For instance, some countries have opened their market to foreign providers of higher education services under mode 3 (commercial presence) but require IBCs to partner with local institutions through joint ventures.

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<sup>13</sup> The level of market opening granted is bound in each member’s schedule of specific commitments for trade in services under GATS (Article XX of GATS). Members may modify their commitments but only after negotiating with affected members and subject to compensation (Article XXI of GATS).

<sup>14</sup> GATS Schedule of the European Union (Germany).

<sup>15</sup> GATS Schedule of Mexico.

<sup>16</sup> While public institutions increasingly need to seek private funding and charge tuition fees, private institutions are sometimes eligible for public funds. Knight, J. 2006. Higher Education Crossing Borders: A Guide to the Implications of the General Agreement on Trade in Services (GATS) for Cross-Border Education. Report prepared for the Commonwealth of Learning and UNESCO. p.22.

<sup>17</sup> All measures falling under any of the categories listed under Article XVI: 2 of GATS must be listed in the market access column, no matter whether such measures are discriminatory according to the national treatment obligation.

<sup>18</sup> The national treatment obligation under Article XVII of GATS requires members to grant to services and service suppliers of other members treatment no less favorable than that accorded to its own like services and service suppliers. Unlike Article XVI (market access), Article XVII of GATS does not include a list of the types of measures that would constitute limitations on national treatment.

Another example would be scholarships or study loans made available only to citizens or residents, which shall be listed as national treatment limitations. Besides, domestic regulations such as approval procedures or requirements (e.g., minimum capital requirements or accreditation status) applied as conditions to obtain a license do not need to be listed if they do not fall under the market access and national treatment obligations.<sup>19</sup> Those requirements are not currently subject to disciplines on necessity or trade restrictiveness.

Notwithstanding the flexibilities referred to above, education is one of the sectors that has attracted the lowest level of commitments. In total, 58 members out of 162 (counting the European Union as one) have undertaken commitments in education.<sup>20</sup> Of these 58 members, 50 have committed in “higher education,” the subsector with the highest number of commitments. Primary education shows the lowest level of commitments (after “other education services,” which constitutes a residual category). Except for acceding members,<sup>21</sup> in general, developing countries have a lower level of commitments in education services compared with their developed counterparts. Within the context of the Doha negotiations, there was a collective request for commitments in the education sector with a focus on private higher education. However, since the negotiations did not conclude, no new commitments resulted.

That said, many developing countries have introduced important reforms in their education systems in recent years, allowing the entrance of foreign providers of educational services. In reality, market access conditions for higher education may be much more liberal than as reflected in trade agreements. Thus, there may be considerable scope to bind some, if not all, of the reforms through trade commitments, and to use that as a means to attract investment to achieve the SDGs in education.

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<sup>19</sup> Article VI of GATS on domestic regulation.

<sup>20</sup> WTO Integrated Trade Intelligence Portal (I-TIP). <http://i-tip.wto.org/services/default.aspx> (accessed 2 October 2016).

<sup>21</sup> Commitments made by recently acceded members (those that acceded to the WTO after its establishment in 1995) are particularly high. As a result of accessions, the sectoral coverage of developing countries and economies in transition is wider than that of developed members.

### 14.3.2 The Modes of Supply of Education Services from the Perspective of the SDGs

The demand for international education is expected to increase from 1.8 million international students to 7.2 million in 2025 (Böhm et al. 2002). While student mobility (mode 2) represented until recently the main form of supply of international trade in education, recent trends referred to in section 14.2 have paved the way to new providers and forms of delivering education services (Table 14.1). While all modes of delivery can contribute toward realizing the SDGs, each mode has different implications. For instance, mode 3 (commercial establishment) offers greater opportunities to enhance quality and capacity in the sector, as well as to reduce shortages of skilled human resources; while mode 1 (CBE including distance education) could potentially promote accessibility at a larger scale in the future, provided minimum levels of quality are met. Similarly, there are potential drawbacks or challenges uniquely associated with each mode of supply. From a policy perspective, the complementary relationship between the different modes of supply should be kept in mind when designing national education policies and undertaking commitments for trade in education.

#### Increasing Education Opportunities Abroad through Student Mobility (mode 2)

Studying abroad offers advantages such as an international quality education with worldwide recognition and better career prospects. The number of students pursuing studies abroad grew from 2 million students in 2000 to 4.1 million in 2013.<sup>22</sup> This increase of mobile students suggests that the growing demand for higher education often exceeds local capacity. The largest numbers of international students in absolute terms are from the PRC, India, and the Republic of Korea, with Asian students accounting for 52% of all students abroad.<sup>23</sup> The second region with most mobile students is sub-Saharan Africa, where the number of students abroad increased from 204,900 in 2003 to 264,774 in 2013 (UNESCO 2012). This region also faces the greatest challenge in the provision of higher education. While in the case of Asia, most students went to OECD countries, particularly the US (19%), the UK (10%), Australia (6%), and France (6%), most students from Africa decided to study within their region, with South Africa as the main country of destination (UNESCO 2012).

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<sup>22</sup> See more at UNESCO. Higher Education. <http://www.uis.unesco.org/Education/Pages/international-student-flow-viz.aspx#sthash.bgEZOtdY.dpuf>

<sup>23</sup> This group grew from 67,300 in 2003 to 165,542 in 2013, with the outbound mobility ratio more than doubling from 3.5% to 7.6% (OECD 2011).

**Table 14.1 Main Forms of Delivery of Higher Education Services**

GATS Mode	Main Feature	Main Advantages from SDGs Perspective	Main Issues and Potential Drawbacks
Cross-border supply—CBE (mode 1)	Program mobility Examples: • Franchising and twinning arrangements • Online education	<ul style="list-style-type: none"> <li>• Enhance access and study offer at a large/global scale</li> <li>• Promote universal access (to the extent it remains affordable)</li> <li>• Increase flexibility and availability of study programs</li> </ul>	<ul style="list-style-type: none"> <li>• Internet infrastructure (broadband) not always available</li> <li>• Local presence requirements, restrictions on cross-border information</li> <li>• Regulatory challenge of ensuring minimum standards of quality more prominent given its cross-border nature</li> </ul>
Consumption abroad (mode 2)	Student mobility: studying abroad	<ul style="list-style-type: none"> <li>• Increase education opportunities abroad</li> <li>• Access to high quality education</li> <li>• Gain international experience</li> <li>• Promote cultural understanding</li> </ul>	<ul style="list-style-type: none"> <li>• High costs</li> <li>• Often subject to availability of funds/scholarships</li> <li>• Risk of brain drain</li> <li>• Migratory restrictions</li> </ul>
Commercial presence (mode 3)	Provider/institution mobility: Establishment of foreign educational institutions including international branch campuses and joint ventures with local institutions	<ul style="list-style-type: none"> <li>• Attract FDI toward education</li> <li>• Improve access and offer locally</li> <li>• Improve quality and capacity domestically</li> <li>• Develop skilled human resources</li> <li>• Reduce brain drain</li> </ul>	<ul style="list-style-type: none"> <li>• Requires regulatory framework to attract FDI</li> <li>• Capacity to attract foreign providers varies among countries (e.g., depending on market size)</li> <li>• Restrictions on foreign suppliers, equity participation</li> </ul>
Presence of natural persons (mode 4)	Academic mobility: Teachers, lecturers, researchers providing education services abroad	<ul style="list-style-type: none"> <li>• Increase availability of qualified teachers</li> <li>• Increase research opportunities</li> <li>• More opportunities for academic exchange</li> </ul>	<ul style="list-style-type: none"> <li>• Migratory restrictions</li> </ul>

CBE = cross-border education, FDI = foreign direct investment, GATS = General Agreement on Trade in Services, SDG = Sustainable Development Goal.

Source: Authors' chart based on taxonomy developed by the Organisation for Economic Co-operation and Development and the World Trade Organization Background Note on Education Services.

While the number of mobile students has increased steadily during the last decade, some may argue that its contribution to improving access may be limited, particularly compared with other forms of delivery of education services. Participation in student mobility is largely self-financed. Studies have shown a correlation between the level of development of a country and the number of students studying abroad. Although student mobility also benefits from the availability of scholarships from different sources,<sup>24</sup> this form of funding is unlikely to be able to keep pace with growing developing country demand for higher education. To lower costs, one option could be for students to study in neighboring countries (as it is the case in Africa) provided that educational services remain affordable in those countries. However, this makes the unlikely assumption that countries in the region, which are at the same levels of development and already struggling to meet their own domestic demand, will have the capacity to meet the expectations of foreign students.

Studying abroad allows students to gain international exposure and experience, which may further strengthen their contribution to the workforce of their home country upon their return. However, capturing the benefits will also depend on attracting back skilled graduates and providing opportunities for them to use their new competencies (Cervantes and Guellec 2002). While the risk of brain drain exists for all countries, developing countries seem to be more exposed. According to some estimates, up to a third of R&D professionals from the developing world are believed to reside in OECD countries (Zimny 2011). For instance, survey evidence shows that 1990–1991 PhD graduates from India (79%) and the PRC (88%) were still working in the US in 1995 (Zimny 2011). In practice, only a few governments restrict students from studying abroad. Indeed, student mobility has the highest percentage of full commitments in market access under GATS—75% for higher education. Given the benefits of having citizens educated abroad, the best course of action may be for developing countries to find other ways to address the risk of brain drain rather than to curb mobility through trade restrictions. There are both push and pull factors, including political instability in the home country or better education and job prospects in the host country, which may lead to brain drain. Some countries have adopted special policies to mitigate the risks of brain drain, such as providing incentive mechanisms to encourage regular returns home and more research opportunities. In some cases, they have also developed means of capturing the benefits and know-how of having

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<sup>24</sup> Scholarships are provided by governments and nongovernment organizations, and public and private institutions.

highly skilled people overseas, for example, by connecting them to domestic researchers through scientific networks (Zimny 2011). Indeed, science and R&D policies are deemed crucial in fostering the return of skilled migrants. In general, the best prospects may be provided by the overall country's situation and better career opportunities. In this regard, long-term policies aimed at building the domestic innovation infrastructure and enhancing the business environment are key (Zimny 2011; Experton and Fevre 2010).

### **Attracting Foreign Direct Investment to Increase Access Domestically and Develop Skilled Human Resources, while Enhancing Local Capacity in Education (mode 3)**

The number of IBCs<sup>25</sup> has grown steadily over the past years, from 82 branch campuses in 2006 to 200 in 2011 (Lawton and Katsomitros 2012). The Observatory on Borderless Higher Education expects the number to reach 280 by 2020 (Lawton et al. 2013). From the perspective of the SDGs, the establishment of IBCs offers unique advantages and spillovers to the host country, which range from increasing local access and skilled human resources to enhancing quality and capacity building domestically. In terms of access, IBCs might reduce the risks of brain drain as the domestic supply of education is improved. IBCs can also contribute to developing an educated workforce, which would help countries to be more competitive in the global market. The main advantage of IBCs compared with other forms of supply may be the opportunity they offer for building capacity locally and strengthening the domestic education system (in both public and private institutions). Spillovers include encouraging the use of new technologies and curricula, more academic mobility, and further research opportunities.

Many developing countries have adopted policies aimed at attracting foreign providers of education services in the past years.<sup>26</sup> Those policies may include incentives provided by governments in the form of capital and infrastructure, which are made conditional to certain requirements such as ensuring the quality and relevance of the education services rendered (e.g., ensuring programs in areas where human resources or training are needed). As IBCs are mainly revenue-driven and require

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<sup>25</sup> The Observatory on Borderless Higher Education defines IBCs as an initiative operated by the institution or through a joint venture in which the institution is a partner in the name of the foreign institution and where upon successful completion of the course program, which is fully taken at the unit abroad, students are awarded a degree from the foreign institution.

<sup>26</sup> See also McBurnie and Ziguas (2007).



heavy investment, the existence of a clear regulatory framework in the host country is crucial to mitigating risks and attracting providers of high quality education services. The highest numbers of IBCs are in Asia (the PRC 33, Malaysia 14, and Singapore 14)<sup>27</sup> and the Middle East (United Arab Emirates 48, Qatar 11). The PRC, Malaysia, and Viet Nam stand out among those countries trying to build capacity in the domestic private sector or improve quality in the public sector (Bashir 2007).

While developed countries (notably the US, the UK, and Australia) continue to account for the largest share of all existing IBCs, attracting around 77% of students worldwide, providers from developing countries are also starting to establish branch campuses in other countries. These developing countries are now not only “importers” of higher education services but also “exporters.” A number of Asian institutions, notably in India, the PRC, and Malaysia are establishing IBCs in Asia and Africa (footnote 16). They appear willing to invest in other countries, including low-income countries, which would normally not attract developed country investors or providers. Some other developing countries (such as Singapore, Malaysia, Mauritius, Qatar, and United Arab Emirates) are also attracting foreign universities to create “regional hubs” for international students within their region.<sup>28</sup> Both strategies constitute a new trend in international trade of education services (footnote 12). From the perspective of the SDGs, these regional hubs provide students in less-developed countries with education opportunities with worldwide recognition at a much-lowered cost.

For the 50 members, which have undertaken commitments in higher education, the level of full commitments for mode 3 is relatively low (47%). Members have listed limitations such as quotas to restrict the number of suppliers, nonuse of subsidies for studying in foreign institutions established locally, as well as foreign equity capital limits and discriminatory fiscal measures. The GATS commitments do not however reflect the actual situation in a number of developing countries where the sector has been opened and many of the restrictions mentioned above eliminated. As those traditional barriers are reduced, regulatory issues are becoming more prominent. The last section will focus on regulatory challenges affecting trade in education and the possible role of trade agreements in helping to overcome them.

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<sup>27</sup> Cross-Border Education Research Team. Branch Campus Listing. Data originally collected by K. Kinsler and J. Lane. <http://globalhighered.org/branchcampuses.php> (accessed 3 August 2016).

<sup>28</sup> See, for instance, Knight (2010).

### **Increasing the Supply of Qualified Teachers and Promoting Academic Mobility (mode 4)**

The SDG targets include substantially increasing the supply of qualified teachers by 2030. Trade liberalization of higher education services could have positive spillovers. Easing restrictions for education professionals can contribute to improving the shortage of qualified teachers, a problem that exists in many developing countries. Mode 4 education commitments under trade agreements would apply mainly to teachers and academics traveling to provide education services on a nonpermanent basis, as well as to managers or staff traveling abroad to set up institutions or franchise and twinning arrangements (footnote 12). Further, liberalization of mode 4 might also support other forms of education services delivery, such as by IBCs through commercial presence. Some recent preferential trade agreements (PTAs) have included specific commitments to facilitate the mobility of education professionals specifically for those purposes.<sup>29</sup> The mobility of people under mode 4, however, raises sensitive immigration-related issues. Although intended to be nonpermanent and entitlement is gained through mode 4, there are often concerns that the persons may stay on and not return to their home country. Not surprisingly, despite its potential contribution, mode 4 has attracted the lowest level of commitments under GATS.

### **Taking Advantage of Information and Communication Technology to Increase Education Opportunities through Cross-Border Education including Distance Education (mode 1)**

One of the main aspects of the internationalization of higher education is the significant growth of CBE due to ICT innovations. Education models such as franchising and twinning arrangements between foreign education providers and local institutions, as well as pure distance learning, have expanded in scope and depth. From the perspective of the SDGs, CBE can greatly contribute to increase access to higher education and provide more education opportunities at a lower cost, thereby also promoting inclusiveness.

Franchising and twinning arrangements<sup>30</sup> do not involve the establishment of the foreign provider, and thus they require less

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<sup>29</sup> See, for instance, the Trans-Pacific Partnership (TPP)—Annexes on Temporary Entry for Business Persons of Japan, Malaysia, and Viet Nam.

<sup>30</sup> Under franchising arrangements, which may take different forms, the local institution is authorized to offer whole or part of the foreign provider's education program. Twinning allows students to enroll in a foreign institution, but students undertake part of their course in a local institution—a mix of program and student mobility (modes 1 and 2).

capital investment. At the same time, they are not subject to the same administrative requirements that normally apply to IBCs. They allow students to enroll in a foreign institution and receive a foreign qualification at a reduced fee, while staying partially or fully in their home country throughout the duration of the course. Besides increasing accessibility, CBE also increases the range of programs available in the receiving countries. In addition, it provides capacity-building opportunities to local institutions, which can learn from the experience of foreign providers. But the highest potential for contribution toward the SDGs arguably comes from massive open online courses (MOOCs), which can provide a cost-effective means of increasing access to higher education especially in developing countries.

A recent study from 212 countries found that online learners from lower socioeconomic backgrounds are significantly more likely to report benefits from online learning.<sup>31</sup> The emergence of MOOCs,<sup>32</sup> which offer courses for free, has generated considerable attention in the last years and may well deserve further analysis in light of the SDGs' objectives on education. As mentioned earlier, a precondition for enjoying the benefits of distance education is having the necessary internet infrastructure including broadband. Thus, for any strategy for using MOOCs to fulfill education, the SDGs must assess the adequateness of the ICT infrastructure supporting the internet.<sup>33</sup> Unfortunately, there is no available data on the number of students benefiting from online courses, or on their origin or regional distribution. According to a survey carried out in the UK, the number of students studying wholly overseas for a higher education qualification increased from around 95,000 in 2011 to 503,795 in 2012. Of those students, 113,060 were enrolled abroad via distance education.<sup>34</sup> The top-five receiving countries were Malaysia; Singapore; Hong Kong, China; Pakistan; and Nigeria (footnote 22).

While the model of MOOCs is based on free access,<sup>35</sup> new ways of generating revenue are being developed as distance learning gains

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<sup>31</sup> The survey was carried out by academics at the University of Pennsylvania and the University of Washington (Wylie 2016).

<sup>32</sup> Massive open online courses are provided through platforms like Coursera, edX, Udacity, and NovoEd.

<sup>33</sup> The number of internet users in the last decade surged from 1 billion in 2005 to more than 3 billion in 2015.

<sup>34</sup> Based on information available at Britain's Higher Education Statistics Agency. See Clark (2012).

<sup>35</sup> A compilation of MOOCs from courses around the world (for free and most offering certificate) can be found at Financial Times. <http://www.ft.com/intl/cms/s/2/039fb95a-161c-11e3-a57d-00144feabdc0.html#axzz42xzfiFMf> (accessed 3 October 2016).

more recognition. Nevertheless, fees paid for online courses will likely remain lower as compared with face-to-face education services. Another advantage of distance education is the possibility it offers to overcome language barriers and thus to reach a broader audience. The language used in international higher education is largely English. While the same applies currently to distance learning, it may be possible to translate online courses to different languages at a faster rate than to train education professionals to teach in different mediums.

After mode 2, CBE has the highest percentage of full commitments in market access for higher education under GATS (69%). Main limitations include restrictions on the electronic transmission of course material, restrictions on the content of programs, limitations on the number of suppliers, and measures requiring the use of local partner or physical presence of the foreign institution. As explained below, some of these restrictions have been addressed through PTAs. In addition, commitments undertaken under other services sectors (notably telecommunications) could contribute to build the infrastructure and introduce the new technologies needed to take advantage of CBE. Besides, initiatives aimed at increasing interconnectivity in developing countries can also help to make available the internet infrastructure required in low-income countries.<sup>36</sup>

In addition to infrastructure, quality assurance and consumer protection are key challenges to the promotion of online education. The use of MOOCs, for instance, to reduce the educational gap in developing countries and to contribute to lifelong learning in line with the SDGs will have to be supported by a robust regulatory framework.

### **14.3.3 New Developments in Preferential Trade Agreements Relevant to Trade in Education Services**

While GATS sets out the multilateral framework for trade in education services, PTAs provide an additional avenue for WTO members to make further commitments in higher education.<sup>37</sup> Up to December 2015, a total of 131 PTAs covering trade in services were notified to the WTO. Building on GATS, a number of PTAs include improvements in education

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<sup>36</sup> It is noteworthy that SDG 9 targets include to “significantly increase access to ICTs and strive to provide universal and affordable access to the internet in least developed countries [LDCs] by 2020.”

<sup>37</sup> Those agreements are allowed subject to certain conditions, including notification to the WTO. For agreements liberalizing trade in services, referred to in GATS as “economic integration agreements.” Article V of GATS lays down the applicable conditions.

services across most subsectors.<sup>38</sup> The impetus of the SDGs may provide momentum for members to multilateralize those commitments as a way of facilitating trade in education services and supporting the achievement of common sustainable objectives.

In general, there has been significant activity on private higher education in PTAs with some 168 commitments in total.<sup>39</sup> While a number of PTAs also include commitments in basic education, mainly those following a “positive-list approach,”<sup>40</sup> these have to be read together with the “public education” reservation usually found in those agreements.<sup>41</sup> It is also noteworthy that these commitments have mainly been taken at the level of the applied regime. As compared with the GATS schedules, market access commitments in PTAs are of greater scope and depth. Recent PTAs also include some additional commitments and disciplines that can facilitate trade in education services. These include disciplines linked to e-commerce that preclude countries from imposing local presence requirements and rules on the digital economy, which could otherwise curb CBE services (mode 1). In addition, the latest PTAs include obligations directed at easing the mobility of people for the supply of education services (mode 4).

Prohibiting local presence requirements<sup>42</sup> such as requiring a representative office and any form of enterprise or residency as a condition to supply a service in a country<sup>43</sup> would remove an important constraint on foreign online education providers.<sup>44</sup> The provision

<sup>38</sup> See also Martin, Marchetti, and Lim (2006).

<sup>39</sup> Information extracted from a sample of 77 PTAs notified to the WTO. For more information on members’ commitments in PTAs notified under Article V of GATS, see WTO I-TIP (University of Oxford 2015).

<sup>40</sup> Under the “positive-list approach,” all sectors/subsectors are liberalized unless otherwise specified in each country’s list of reservations.

<sup>41</sup> This reservation generally covers social services including public education services to the extent they are social services maintained or established for a public purpose.

<sup>42</sup> This provision is commonly found in PTAs concluded by the US, including the Trans-Pacific Partnership Agreement (TPP).

<sup>43</sup> See, for instance, US–[the Republic of] Korea (KORUS) and the TPP—a plurilateral PTA concluded by 12 WTO members in 2015 (ratification in most TPP parties is pending). This obligation should be looked at in conjunction with the reservations made by the parties in the annexes.

<sup>44</sup> Measures requiring the physical presence of the foreign institution have been identified as one of the main barriers affecting CBE. WTO Background Note by the Secretariat on Education Services, p. 23. The WTO Work Programme on Electronic Commerce states, “Exclusively for the purposes of the work programme, and without prejudice to its outcome, the term ‘electronic commerce’ is understood to mean the production, distribution, marketing, sale or delivery of goods and services by electronic means.”

on localization requirements is relevant to CBE as it would prohibit requirements on the use of local computing facilities, such as servers, as a condition for providing online education services in a country.<sup>45</sup>

The WTO adopted in 1998 the Work Programme on Electronic Commerce and since then members have been discussing different aspects related to this area, though no agreement has so far been reached.<sup>46</sup> A number of PTAs on the other hand already include e-commerce-related provisions.<sup>47</sup> Some recent PTAs provide not only rules on nondiscrimination and cooperation on the prevention of deceptive practices to protect consumers, but also on cross-border data flows and data localization requirements.<sup>48</sup> While restrictions on cross-border data flows often relate to the movement of personal data, localization requirements apply to local storage and processing. The motivations behind these policies generally fall under concerns for privacy and security (OECD 2015). However, the line between those legitimate concerns and protectionist purposes is often hard to establish (Stone, Messent, and Flaig 2015). When overly restrictive, they may affect a wide variety of sectors including education. As mentioned above, limitations on the electronic transmissions of course material and course content have been identified as one of the main barriers affecting CBE (Beugelsdijk, Smeets, and Zwinkels 2008).

Other developments in PTAs that could be of interest is the easing of restrictions of mode 4 service suppliers, which would cover independent education professionals such as teachers, academics, and other staff of education institutions.<sup>49</sup> Commitments in mode 4, even in PTAs, however remain modest. That said, facilitating the movement of education professionals could be an important way by which trade in education services could support the SDGs. This is particularly so

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<sup>45</sup> See Article 14.3 of the TPP. A covered person includes a service supplier of a party.

<sup>46</sup> Some GATS provisions already apply to digital trade (e.g., some transparency obligations). Subject to each member's commitments, the GATS obligations on national treatment and market access may also apply to certain internet-related services.

<sup>47</sup> The type and depth of e-commerce provisions vary greatly across PTAs. Examples of PTAs including e-commerce-related provisions are Singapore–Australia (SAFTA), [the Republic of] Korea–Singapore, KORUS, and the Association of Southeast Asian Nations (ASEAN)–Australia–New Zealand.

<sup>48</sup> Those obligations are subject to exceptions aimed at protecting legitimate policy objectives. See Articles 14.11.3 and 14.13.3 of the TPP.

<sup>49</sup> Immigration requirements would still apply. See, for example, the TPP–Annexes on Temporary Entry for Business Persons of Japan, Malaysia, and Viet Nam. <https://www.mfat.govt.nz/en/about-us/who-we-are/treaties/trans-pacific-partnership-agreement-tpp/text-of-the-trans-pacific-partnership7>

given the shortage of education professionals in developing and least developed countries.

## 14.4 Main Regulatory Challenges Concerning Trade in Education Services and the SDGs

While trade liberalization can contribute to improving access to and quality in education, it also requires putting in place a complementary regulatory framework to ensure that social objectives are achieved. As governments move away from being the only providers of higher education toward allowing private providers, their regulatory and oversight function becomes more important (Experton and Fevre 2010). This poses particular challenges to least developed countries which may not always have the institutional capacity required to develop and enforce the accompanying regulations. Host countries' policies on education are of utmost importance when it comes to deciding where to invest or provide education services (Experton and Fevre 2010). The market size of a country, political stability, and other factors (e.g., geographic situation) are also important. Regulatory frameworks should aim at striking a balance between minimizing risks for providers and ensuring that trade opening promotes public objectives in education.

Among the main regulatory issues are ensuring that education services meet minimum standards of quality and that there is equity of access to education. These issues are in turn directly linked to the SDGs—ensuring inclusive and quality education. While quality assurance is closely related to the accreditation of institutions and recognition of degrees or qualifications,<sup>50</sup> equity touches upon the issue of universal access to education. Policy makers may not think specifically of trade when designing and implementing regulations aimed at safeguarding quality and inclusiveness in education. However, trade agreements can help to address those regulatory issues in a manner that does not hinder the benefits of opening trade in education services, thereby fostering coherence among policy objectives. This section focuses on the potential role of trade agreements in helping to overcome the main regulatory challenges in education, with a view of providing some policy options at the end.

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<sup>50</sup> A distinction must be made between recognition of foreign qualifications for employment purposes and recognition of foreign qualifications for education purposes.

### 14.4.1 Ensuring the Quality of Education

When it comes to trade, quality assurance and recognition of foreign degrees or qualifications are key factors affecting market access. In principle, there is no reason to apply different quality regimes to foreign providers, although some ways of delivering education services may pose unique regulatory challenges. An international framework on quality assurance and accreditation would certainly help, and some attempts have been made to agree on international rules on quality assurance and accreditation, but so far no international standards exist (OECD 2002).

Quality assurance is thus of utmost importance not only for governments in both receiving and home countries, but to all stakeholders involved. On the one hand, students require quality education and protection from fraudulent or substandard providers caused by information asymmetries. On the other hand, education service providers require a transparent and predictable framework on accreditation and recognition, which is based on objective criteria. Last but not least, quality assurance also has implications for the labor market as employers need to have confidence in the value of the degrees and qualifications earned. Some of these challenges are addressed by regional initiatives on the recognition of academic and professional qualifications, including the six UNESCO regional conventions.<sup>51</sup>

However, the expansion of CBE has both amplified and raised new issues. Many institutions that provide cross-border programs typically operate outside the territory in which their services are being delivered, which makes them in many ways “stateless” (Knight 2006). Apart from the question of jurisdiction, for many developing countries that already struggle with quality assurance of local providers, taking on the task of handling low quality or rogue providers and accreditation mills from abroad can be overwhelming (Hopper 2007). One way might be to rely on the quality assurance mechanisms of the sending country or those developed by recognized international associations.<sup>52</sup> Moreover, countries may need to align their quality assurance mechanisms to their own development objectives, and this may not be taken into account

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<sup>51</sup> Regional Conventions on Recognition of Studies, Diplomas, and Degrees concerning Higher Education, which are binding among the parties to those conventions. <http://www.unesco.org/new/en/education/themes/strengthening-education-systems/higher-education/conventions-and-recommendations/>

<sup>52</sup> See, for instance, the International Network for Quality Assurance Agencies in Higher Education. <http://www.inqaahe.org/>. But even in those cases, identifying those entities that can provide a reliable quality assurance assessment of CBE providers may be key in view of local capacities and constraints (Hopper 2007).



by the sending country. Another problem that may arise is the risk of creating a two-tier system. As private providers will normally target self-financed students, not all sectors of society may benefit equally from more open trade in education. An example might be a brain drain of teachers and academics from public to private institutions due to higher salaries, leading to a decrease of quality in public higher education.

How could such challenges be addressed while undertaking trade commitments to open the education sector? In the case of GATS, governments have the space to adopt any regulations and procedures deemed necessary, including for quality concerns. The main disciplines of the agreement are on transparency and avoiding discrimination, but these do not prevent governments from setting their required education standards and procedures. GATS only provides a basic standstill framework to ensure that countries' regulations do not constitute unnecessary barriers to trade. There is a mandate for negotiating further disciplines on domestic regulation, but very limited progress has been achieved so far.<sup>53</sup> Even then, much of the emphasis on the domestic regulation negotiations has been on improving transparency and reducing the administrative burden of obtaining licenses and qualifications. Indeed, such disciplines could help improve the efficacy of the measure. By the same token, international trade negotiations could stimulate policy dialogue among the different agencies and stakeholders involved in the development of quality assurance systems to enhance the effectiveness of those policies and coherence among different objectives.

While the development of quality assurance mechanisms is not within the purview of GATS, regulatory coherence between rules or guidelines on quality assurance could help trade opening strategies in education. Building on international and regional initiatives, it may be possible to foster regulatory cooperation for the development of a set of basic multilateral principles or nonbinding guidelines that could be used as a basis by national accreditation and quality agencies. A number of initiatives have been taken by different international and regional organizations (e.g., UNCTAD, OECD, Asia-Pacific Economic Cooperation [APEC]) aimed at developing international guidelines for quality provision in higher education. They adopt the form of recommendations based on good practices ("soft law"). The best example is the UNESCO and OECD "Guidelines for Quality Provisions in Cross-Border Higher Education."<sup>54</sup>

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<sup>53</sup> See GATS Article VI:4 (domestic regulation).

<sup>54</sup> They include recommendations for a range of stakeholders and encourage governments to establish mechanisms for accreditation and quality assurance in their territory. See <http://www.oecd.org/general/unescooecdguidelinesforqualityprovisionincross-borderhighereducation.htm>

Countries having assumed commitments in higher education under GATS may decide to undertake additional commitments based on those principles or guidelines as a means of promoting the transparency and predictability of their quality assurance mechanisms. Disciplines on domestic regulation could complement those initiatives by enhancing transparency of education regulations and by easing or speeding up quality accreditation procedures (e.g., reducing time frames, documentation requirements, and fees).<sup>55</sup> Besides, agreements on the recognition of academic and professional qualifications concluded within the purview of GATS Article VII could also help.<sup>56</sup> This provision also states that, wherever appropriate, recognition should be based on multilateral criteria and developed in cooperation with governmental and nongovernment organizations.<sup>57</sup> All or some of the elements mentioned above could form part of a WTO sectoral initiative aimed at boosting trade in higher education while addressing pressing regulatory issues with the aim of contributing toward the SDGs. The adoption of the SDGs could also foster a dialogue on promoting sustainable investment in education.

#### 14.4.2 Issues of Universal Access and Service

Trade in higher education can contribute to increasing supply, which in turn could help to enhance inclusiveness in education. However, universal access and service policies may still be necessary to ensure that certain segments of society are not left unattended. This is particularly the case for developing countries where the basic education needs of the population may not have been fully met. Thus, for international trade

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<sup>55</sup> Leaving aside regulatory substantive criteria (related to the “necessity test”) where countries still have very divergent views.

<sup>56</sup> Article VII provides flexibility for members to achieve recognition on the education or experience obtained, requirements met or licenses or certifications granted in another country. Those agreements have to be notified to the WTO, and adequate opportunity shall be afforded to other interested members to accede to such agreements or to negotiate comparable ones. Countries have concluded these types of agreement for certain specific professions and in many cases as part of a broader process of integration between two or more countries (e.g., within the European Union and APEC). See, for instance, APEC. [http://www.apecarchitects.org/index.php?option=com\\_content&view=article&id=61&Itemid=75](http://www.apecarchitects.org/index.php?option=com_content&view=article&id=61&Itemid=75)

<sup>57</sup> Article VII paragraph 5. See also WTO Guidelines for Mutual Recognition Agreements in the Accountancy Sector. These are nonbinding guidelines and are intended to be used by governments to make it easier to negotiate agreements on the mutual recognition of professional qualifications. Besides, some PTAs include rules or guidelines aimed at facilitating the mutual recognition of qualifications for certain professions. Such bilateral or plurilateral initiatives could lead to further cooperation in the education sector in the future.

agreements to support the SDGs in education they have to contribute to not only increasing supply but to also reducing disparities in access. One way would be to promote the liberalization of new forms of delivery, which are less costly and have potential for scaling up, such as MOOCs and other new methods for the delivery of CBE. To do so, quality assurance mechanisms that are suited to such programs would have to be put in place. The advantage of distance learning with no or limited student mobility is that it is particularly cost-effective (OECD 2004).

One approach might be to combine market opening with funding mechanisms such as student scholarships and loan schemes.<sup>58</sup> Under such an approach, rather than making funding available only to those students enrolled in domestic institutions, universal access objectives would be better served by making them available to domestic students enrolled in both national and foreign institutions.<sup>59</sup> Given the considerable costs involved, such an option is unlikely to be pursued, however. While other funding mechanisms exist (e.g., those made available by international institutions or nonprofit providers), these may not be able to cope with the demand for higher education.

Another option, which would not be constrained by financing, could be to apply “universal services obligations” (USOs) to domestic and foreign providers of education services with the aim of favoring disadvantaged groups.<sup>60</sup> GATS would not hinder a government’s right to adopt policies and regulations aimed at promoting universal access in education provided those policies are applied in a nondiscriminatory manner. That said, not many governments apply USOs on education services providers. There may be several reasons for that. In most cases, USOs are more common in infrastructure or network services, for example, telecommunications. Such measures are typically imposed when the sector is akin to a natural monopoly, and unless the incumbent provides the service, no other player will be able to do so. In the case of education, the sector does not have the characteristics of a natural monopoly, and often multiple suppliers exist, in many cases with public and private education providers operating side by side.

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<sup>58</sup> In the first case, the source is mainly public; while in the second case, it may come from public, nongovernment, or private institutions.

<sup>59</sup> Examples of countries adopting such an approach are Malaysia and Thailand. See OECD (2004).

<sup>60</sup> An example of USO not scheduled includes measures in the health sector requiring all commercially established hospitals to provide 20% of their services to the poor; another example from the finance sector would be measures requiring all banks established in the capital to operate subsidiaries in all other major cities throughout the country. See UNCTAD (2006).

Furthermore, the policy aim might be to make the regulatory environment as conducive as possible for attracting foreign providers of high-quality education services, and imposing universal service requirements might be a disincentive. Countries with a small domestic market might also be wary of imposing too many conditions. Ultimately, a balance would need to be struck between opening the market to attract foreign providers and ensuring that public policy objectives such as ensuring universal access to education are met.

The WTO reference paper in basic telecommunications is an example of how to strike this balance with explicit recognition of USOs and the right of members to define their scope, provided they comply with certain basic principles such as nondiscrimination and transparency.<sup>61</sup> The experience in the telecom sector could arguably be used as a model in other sectors with significant public sector involvement such as education. Indeed, confirming members' right to use universal services policies consistent with GATS was discussed as part of the WTO negotiations on domestic regulation.<sup>62</sup> GATS could help by using the reference paper model to make explicit the right to impose USOs, which would support the SDGs, while providing some principles under which those obligations can be applied to avoid discrimination. Where minimum requirements are needed, these should be carefully crafted to ensure they do not hinder other policy objectives.

## 14.5 Conclusion

This chapter has discussed how trade has the potential to help increase supply and investment in the education sector, thereby enhance quality and access opportunities in support of the SDGs. The reality today is that with or without explicit policies to leverage the role of the private sector, private sources of funding, including FDI, in higher education has become increasingly prominent. Sometimes this is a response to an underfunded public sector; in other cases, it is due to personal career

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<sup>61</sup> Some have raised concerns about the implications of Article VI:4 on domestic regulation and the “necessity test” on USOs as this provision refers to measures necessary to ensure the “quality of the services providers.” Article IV:4 has been under review and some members have suggested changing the language to also include other legitimate policy objectives, which would include ensuring equity in access.

<sup>62</sup> See Second Revision, Draft Disciplines on Domestic Regulation Pursuant to GATS Article VI.4. Informal Note by the Chairman. Room Document. 20 March 2009. Paragraph 12.

development choices; or it might simply be a response to a lack of sufficient places in public institutions of higher education. Whichever the root cause, private education institutions are competing globally to provide higher education services, and developing and emerging countries are important new markets.

Thus, it becomes important for any strategy to achieve the SDGs in education to understand the changing dynamics and demands in the sector and to find effective ways to maximize the impact of the private sector. The internationalization of trade in higher education has gone hand in hand with the emergence of new business models and ways of delivering educational services from foreign education institutions bringing “bricks and mortar” investment to online providers offering MOOCs. These developments offer more education opportunities and can enhance inclusiveness. Another dimension to trade and education services and the SDGs is how some developing and emerging economies, apart from being importers of education services, have also established regional hubs providing higher education services to other developing countries.

At the same time, the gains from trade and the involvement of the private sector in skills development will not address all education objectives. There is thus a need for an appropriate policy and regulatory framework to ensure quality and inclusiveness. Such a framework need not be at odds with market openings; rather, trade in education services needs regulations that help improve predictability, transparency, and confidence in the quality of services provided. Take, for instance, cross-border education including online education. This mode of supply may significantly increase access and would benefit from an international framework for quality assurance. This calls for strengthened cooperation between agencies in different countries, which would in turn support international trade.

On finding a balance between trade and regulation, and on using regulatory frameworks to support and complement market opening, GATS provides ample flexibility to meet virtually all policy objectives. The agreement neither sets standards nor prescribes policies or their level of attainment—that is the prerogative of governments and their agencies. These policies should be implemented in a nondiscriminatory manner and not serve as a disguised trade restriction. The framework of international trade agreements and the flexibility provided should be used to support the SDGs—by reducing barriers to entry and competition in the education sector; by enhancing the transparency and predictability of education regulations, which would help attract FDI and new providers of education services; and by spurring the internationalization of education.

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# 15

## Trade in Medical Products and Pharmaceuticals

*Matthias Helble and Ben Shepherd*

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### 15.1 Introduction

Trade economists have long argued the case that increased openness to international markets can, under the right circumstances, boost productivity, which is the backbone of sustained growth in per capita incomes. The distribution of the gains from trade in a way that conforms to each society's view of equity is an issue best addressed by complementary policies such as tax, welfare, and social safety net measures. But the experience of many developing countries suggests that trade can be an important part of promoting economic growth, which can help reduce poverty. Trade is therefore intimately linked to Sustainable Development Goal (SDG) 1 which relates to ending poverty, and SDG 8 which relates to promoting sustained, inclusive, and sustainable economic growth. The relationship between trade and growth is not as simple and direct as was believed by some commentators in the 1990s, but there is a broad consensus that without openness to international markets for goods, services, labor, and capital, it is difficult, if not impossible, to bring about rapid economic growth and development.

The motivation for this chapter is not, however, to delve further into the links between trade and economic outcomes, such as growth and poverty reduction. Instead, it examines the ways in which openness to trade can help improve development outcomes other than through channels such as income and productivity. It focuses specifically on the case of health. The intuition is simple: trade openness reduces prices and increases access and variety for consumers. The point holds just as strongly for products that are important for health-related development outcomes as it does for consumer goods. This chapter makes a case for priority liberalization of trade policies affecting “development products” such as those used in health services.

It argues that trade can, and should, play a role in attaining SDGs other than 1 and 8, in particular SDG 3: ensuring healthy lives and promoting well-being for all ages.

Trade and health is an issue that has been extensively examined over the last 10–15 years. However, that discussion has focused largely on the issue of intellectual property rights. Trade agreements now routinely include chapters on protection of intellectual property rights. At the World Trade Organization (WTO), the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) lays down minimum standards for protection in member states. Pharmaceuticals are a product where intellectual property issues loom large from a development standpoint, because there could be a conflict between promoting innovation on the one hand, and extending access to crucial medications on the other. Indeed, many developing countries were so concerned about this conflict in the context of the AIDS epidemic that they successfully campaigned for the 2001 Declaration on TRIPS Agreement and Public Health.

Another aspect of trade and health that has received considerable attention is trade in health services. Trade in health services can be delivered in all four modes of supply, as defined by the WTO's General Agreement on Trade in Services. One of the most prevalent forms of trade in health services is by medical travel, i.e., when a patient seeks medical treatment abroad.

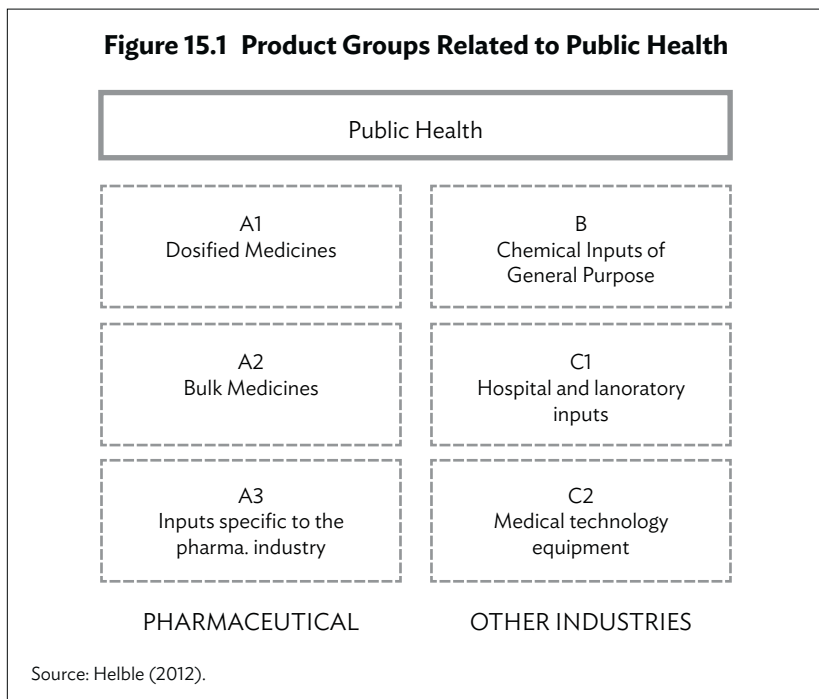
The focus of this chapter is on trade of all physical goods that enter the health sector. These goods are either those that can be used directly for diagnosis and treatment of patients or those that are necessary for testing and medical research. The chapter proceeds as follows. Section 15.2 first shows how international trade in health products has evolved in recent years. It then outlines trade policies affecting six core groups of health-related products, and identifies their effects on the world's poor. Section 15.3 examines the special case of vaccines, and reports on an econometric analysis that establishes the important role of logistics services—which are traded internationally—in promoting access. Section 15.4 presents evidence from the world market for insulin, a crucial product in the management of diabetes. The final section concludes and addresses policy implications.

## **15.2 Trade and Trade Policies In Health Products**

In terms of economic mechanisms, the most obvious linkage between trade and health is on the consumption side. We know that health expenditures around the world have been increasing rapidly, especially

in fast-growing economies. According to general principles, open trade can facilitate the access of health-care providers or patients to health products at competitive prices, and in new varieties.

Helble (2012) maps out the “universe” of health products covering 207 subheadings of the Harmonized System (HS). The list consists of products in three groups: (i) medicines, (ii) chemicals used in the production of pharmaceuticals, and (iii) hospital and laboratory inputs and equipment (Figure 15.1). This “universe” of health products consists of a carefully selected list. However, as stated by the author, the list is only an approximation of the full trade. Some subheadings might include products that are not only used in the public health domains, such as syringes used in medical, surgical, dental, or veterinary sciences (HS 901831). On the other hand, the author excludes categories where the subheading captures products that are, in the majority, non-health related. For example, malaria bed nets fall under HS 630493: “Not knitted or crocheted, of synthetic fibers; articles for interior furnishing, or synthetic fibers.” Despite these caveats, analyzing international exchanges in these health products gives us important insights into the role of trade for public health.



### 15.2.1 International Trade of Health Products

First, we study the evolution of world trade in all health products since 2002. We therefore download all imports in health products reported by 201 countries. Figure 15.2 depicts the evolution of international trade of health products since 2002 by world region (World Bank classification of world regions). Overall, we observe that international trade in health products increased rapidly. The biggest trader of health products is region Europe and Central Asia. North America is the second-largest market for health products. However, developing countries have been expanding their role as a provider of health products.

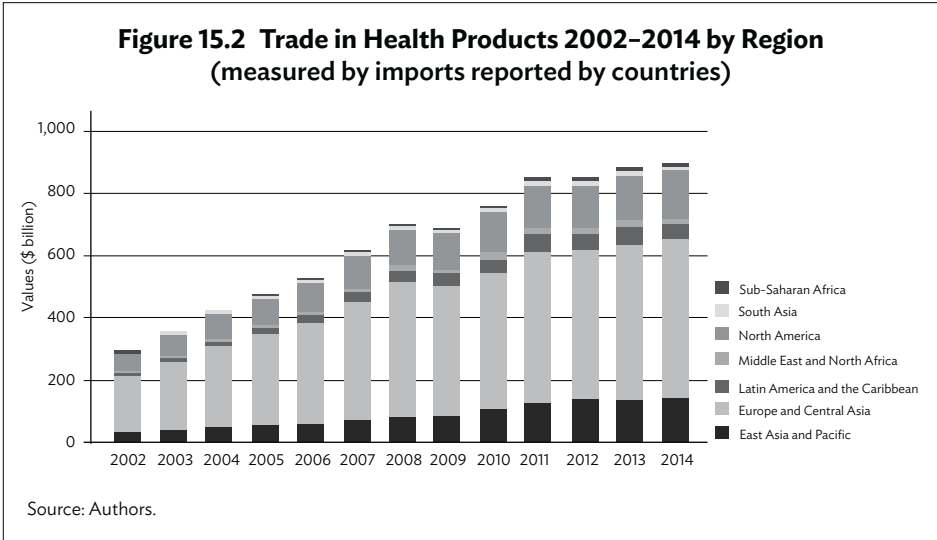
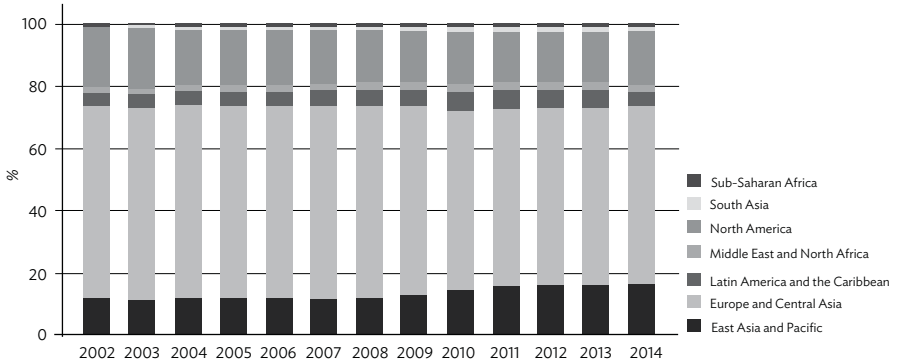


Figure 15.3 shows the relative shares of the seven world regions. Europe and Central Asia as well as North America account for the lion’s share in international trade in health products. However, their combined share fell from 81.9% in 2002 to 74.0% in 2014. As a corollary, the shares of regions with developing countries rose steadily. The share of East Asia and the Pacific increased from less than 11.7% in 2002 to 16.0% in 2014. The relative increase was largest in South Asia (from 0.1% to 1.5%) and sub-Saharan Africa (from 0.6% to 1.2%). Despite the considerable expansion of the market shares of developing countries,

**Figure 15.3 Shares of Trade in Health Products 2002–2014 by Region (measured by imports reported by countries)**



Source: Authors.

one should not forget that the developing countries also have by far the largest needs. If we take the Organisation for Economic Co-operation and Development (OECD) membership as a benchmark for the level of economic development, we know that the population share of non-OECD countries was about 83% of the world in 2014; however, the imports of health products only amounted to 24%. The example of South Asia illustrates this point. Even though South Asia represents 24% of the world population, it only absorbs 1.5% of internationally traded health products. There is, of course, a significant production of some health products in that region, but substitution of local production for imports could result in higher prices or reduced access to high-quality varieties in some cases.

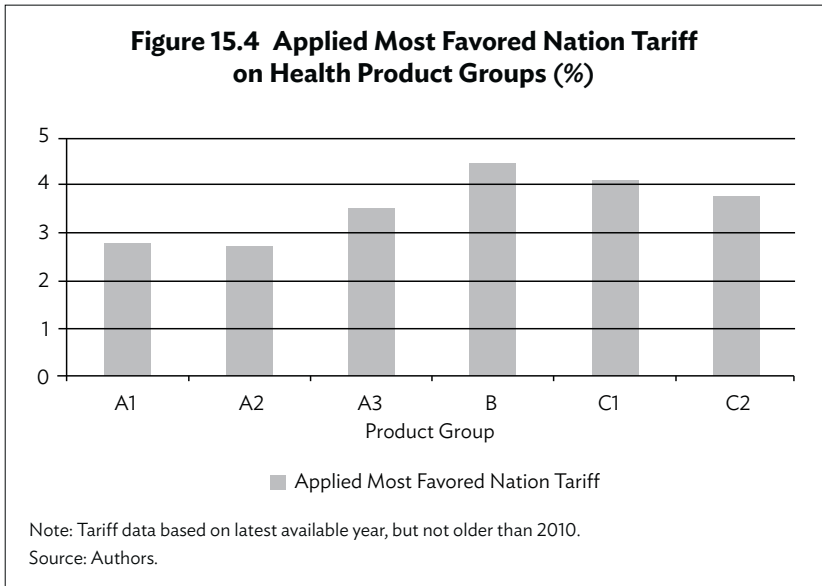
## 15.2.2 Tariffs on Health Products

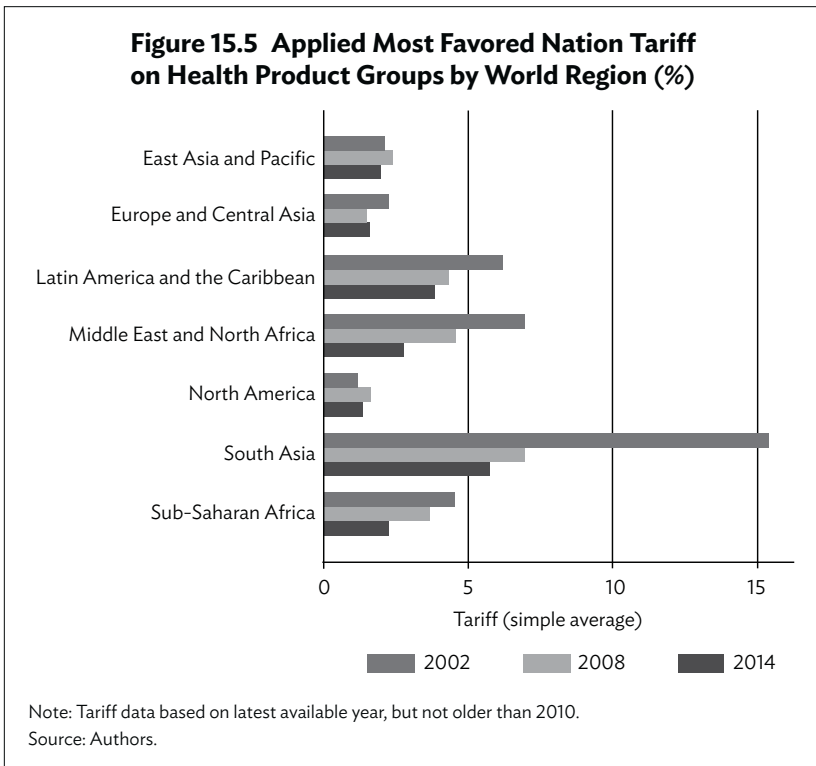
Tariffs and nontariff measures (NTMs) restrict access to health products. Tariffs are relatively easy to measure as they are reported to international bodies, including the WTO. In contrast, comparable international records on NTMs are sparse. Yet, NTMs play an important role for health products. Developed countries, in particular, have stringent standards for medicines and other health products. It is important to emphasize at the outset that although some NTMs, such as quality controls, can have important public benefits that justify their use, the same cannot be said of

tariffs. Tariffs simply transfer income from consumers to local producers and the government, with an additional cost in economic efficiency. There is no public policy objective, such as consumer protection, that is achieved in a first-best way by tariffs. Conceivably, there could be an argument that, to promote infant industries in developing countries, it is important to protect producers of health products. However, that position has proved problematic in historical context, as infants rarely “grow up.” In addition, it is difficult, from a development perspective, to accept that promotion of a particular domestic industry trumps the public health objective of ensuring maximum possible access to health products.

To assess the barrier stemming from tariffs, we first downloaded the latest applied Most Favored Nation (MFN) tariffs for the six commodity groups introduced above for 160 countries. The simple averages of the applied MFN tariff across all countries for the six commodity groups are presented in Figure 15.4. At this level of aggregation, we observe that the average tariffs are rather low, ranging between 2.8% and 4.4%. However, the simple average hides substantial difference across regions, across countries, and across individual products. In a second step, we therefore look at seven different regions.

Average applied tariff MFN rates by World Bank developing region are presented in Figure 15.5. It is important to emphasize that these are statutory tariff rates that apply to everyday imports of health-related





products. In cases of emergency relief, countries typically do not levy customs duties on incoming supplies. So the focus here is on policies that can affect the general level of health and health-care service provision in a country in ordinary times, not emergencies. We note that the tariffs have been coming down in the past years. On average, the most protected developing region is South Asia. Although the average tariff is relatively low, at about 8% for pharmaceuticals and 6% for medical instruments, it seems difficult to justify at all on development grounds, as discussed above.

On average, tariff rates on pharmaceuticals and medical equipment are relatively low, and a wide range of countries allow duty-free access. However, the fact that tariffs persist at all is puzzling in light of the importance of ensuring access to affordable medicines for poor people. From a political economy perspective, it would be important to know what forces in some developing countries align to prevent the entry of low-cost health products from the world market. In some cases, it is likely infant industries lobbying for protection from international



competition. But there also appear to be countries that levy tariffs on imported medicines even though they do not have significant domestic capacity.

Moreover, the regional averages conceal considerable variation across countries. The two largest countries in South Asia also have the highest tariffs: India at 10% and Pakistan at 12%. In the case of India, protection of the domestic pharmaceuticals industry is one possible political economy explanation for the existence of this significant import tax. However, that industry is already globally competitive and seems to have little need of protection on infant industry grounds. Countries in other regions, often without significant domestic manufacturing capacity, also impose significant tariffs on pharmaceuticals. Examples include Tunisia and Djibouti (11%), Ghana (9%), and the Lao People's Democratic Republic (8%).

In most regions, average tariff rates on medical equipment are lower than for pharmaceuticals. However, the averages again mask considerable cross-country variation: in fact, the countries with the highest tariffs in this sector apply them at levels that far exceed those for pharmaceuticals. For example, Djibouti taxes foreign medical instruments at an average rate of 24%, Iran applies a 14% tariff, and rates in the next 10 most protected countries (covering five of the six World Bank regions) are approximately 10%. There are undoubtedly political economy motivations for these tariffs in each country, in addition to possible revenue-raising objectives.

To take a more detailed look at the tariff levels of health products, we study the tariffs at the highest level of disaggregation, 6 digit HS. For our analysis, we look at the latest available tariff (but not older than 2010) of 158 countries in 190 health products. Out of the possible 30,020 observations, we are able to gather 20,486 tariff lines. In Table 15.1, we measure the percentage of tariff lines that are equal or above a certain level. We observe that on more than one third of all tariff lines import duties of more than 5% are levied. On almost 10% of all

**Table 15.1 Percentage of Tariff Lines Protected with High Import Duties**

Tariff level	Percentage of Tariff Lines with a Tariff of ...			
	0%	5%≤10%	10%≤15%	<15%
% of tariff lines	49.0%	27.6%	7.3%	2.1%

Note: Tariff data based on latest available year, but not older than 2010.

Source: Authors.

tariff lines, the import duties are still above 10% and on 2.1% of the tariff lines, we found rates above 15%.

To know the countries that still maintain high tariffs on health products, we calculate the applied tariff (simple average) across all health products for all countries in our sample. Table 15.2 lists 28 countries that levy on average a tariff higher than 5% on health products. Among these countries, we find a few advanced economies such as Chile and the Republic of Korea. Furthermore, the list includes two large countries: Brazil and India. However, most of the countries are among the poorest in the world, including several least developed countries in Africa and Asia. Most of these countries do not have any domestic industry that produces health products. Charging tariffs therefore only creates additional costs for patients without having any economic rationale.

**Table 15.2 Countries with High Applied Tariffs on Health Products**

Country Name	Applied Tariff (simple average)	Country Name	Applied Tariff (simple average)
The Bahamas	25.9	Congo, Democratic Republic of the	6.3
Djibouti	20.0	Central African Republic	6.3
Bermuda	15.1	Brazil	6.1
Anguila	14.8	Algeria	6.0
Iran, Islamic Republic of	12.2	Chad	6.0
Maldives	10.8	Argentina	6.0
Ghana	10.0	The Gambia	5.9
Cuba	8.1	Sierra Leone	5.7
India	8.0	Venezuela	5.7
Ethiopia	7.7	French Polynesia	5.4
Aruba	7.6	Uzbekistan	5.4
Nepal	6.8	Bangladesh	5.2
Cameroon	6.8	Samoa	5.2
Pakistan	6.7	Lao People's Democratic Republic	5.1

Source: Authors.

**Table 15.3 Most Protected Products with Applied Tariffs Above 10% by Number of Countries**

Product Code	Product Description	Number of Countries with Applied Tariff above 10%
900630	Cameras for medical or surgical examination (or other purposes)	54
940210	Dentists', barbers', or similar chairs and parts thereof	48
940290	Other medical, surgical, dental, or veterinary furniture	32
401511	Surgical gloves of vulcanized rubber	30
300692	Waste pharmaceuticals	30
701720	Laboratory, hygienic, or pharmaceutical glassware	25
290410	Sulfonated derivatives of hydrocarbons	25
701790	Other laboratory, hygienic, or pharmaceutical glassware	23
401490	Other hygienic or pharmaceutical articles of vulcanized rubber	23

Source: Authors.

The analysis allowed us to better gauge the distribution of the applied tariffs as well as to know the countries that maintain the highest tariff levels. To know the products that are subject to the highest protection, we looked at all health products with above 10% applied tariffs. In Table 15.3, we count the number of countries that have tariffs above 10% and show the nine most protected goods. For example, our data reveals that, in 30 countries, for importing surgical gloves of vulcanized rubber, import duties of more than 10% need to be paid. The most protected health products are cameras for medical or surgical examination. (This HS subheading also covers cameras for underwater and aerial survey as well as comparison cameras for forensic or criminological purposes. All these additional purposes probably account, in most countries, for a small share compared with cameras used for medical or surgical purposes.)

In Tables 15.4 and 15.5, we highlight two product groups with particularly high tariffs: surgical gloves and cameras for medical or surgical examinations. Nineteen countries levy applied tariffs of 20% or more on surgical gloves. It is difficult to see which of these countries

could have an interest in protecting a domestic industry of surgical gloves, as several of the countries are small economies with small industrial bases. For health care, surgical rubber gloves are heavily used and thus constitute an important input. Lowering the tariffs for rubber gloves could therefore make a direct contribution to lower health-care costs.

Cameras for medical or surgical examination of internal organs are another example of health products with high tariffs. The list of countries with applied tariffs exceeding 20% includes 46 countries, of which almost 20 are least developed countries. The less developed and least developed countries, in particular, have no domestic industry that might compete with imports. Levying high tariffs is a direct burden for public health.

We have just examined several specific types of health-related products, albeit important ones. The findings are symptomatic of a more general problem: activist trade policies that insulate countries from world markets can push up prices and limit availability of important development products, i.e., goods that play a particular role in promoting the SDGs other than through income channels. Trade can be a lever to promote non-income objectives in the SDGs such as the health goals of SDG 3.

**Table 15.4 Countries with an Applied Most Favored Nation Tariff of 20% or More on Surgical Gloves of Vulcanized Rubber (Harmonized System Code 401511)**

Algeria	Maldives
The Bahamas	Namibia
Botswana	Pakistan
Congo, Rep. of the	Samoa
<b>Djibouti</b>	South Africa
Fiji	Swaziland
<b>The Gambia</b>	Tonga
Iran, Islamic Rep. of	<b>Tuvalu</b>
Jordan	Viet Nam
<b>Lesotho</b>	

Note: Least developed countries in bold.

Source: Authors.

**Table 15.5 Countries with an Applied Most Favored Nation Tariff of 20% or More on Specially Designed Cameras (Harmonized System Code 900630)**

Algeria	Guyana
Anguila	Jamaica
Antigua and Barbuda	<b>Liberia</b>
The Bahamas	<b>Madagascar</b>
Barbados	<b>Mali</b>
Belize	<b>Mauritania</b>
<b>Benin</b>	Montserrat
<b>Burkina Faso</b>	<b>Mozambique</b>
<b>Cambodia</b>	<b>Niger</b>
Cameroon	Nigeria
<b>Central African Republic</b>	Samoa
<b>Chad</b>	<b>Senegal</b>
<b>Congo, Dem. Rep. of the</b>	<b>Sierra Leone</b>
Congo, Rep. of the	St. Kitts and Nevis
Cote d'Ivoire	St. Lucia
Cuba	St. Vincent and the Grenadines
<b>Djibouti</b>	<b>Sudan</b>
Dominica	Suriname
<b>Fm Sudan</b>	Syrian Arab Republic
Ghana	<b>Togo</b>
Grenada	Tonga
<b>Guinea</b>	Trinidad and Tobago
<b>Guinea-Bissau</b>	Uzbekistan

Notes: These comprise cameras specially designed for underwater use, for aerial survey, or for medical or surgical examination of internal organs; and comparison cameras for forensic or criminological purposes (Harmonized System Code 900630). Least developed countries in bold.

Source: Authors.

### 15.2.3 Nontariff Measures for Health Products

NTMs refer to measures other than import duties which can affect market access. Examples are technical regulations, product standards, or pre-shipment inspections. Health products are typically subject to numerous

NTMs, most prominently product registration and approval, as they have the potential to directly impact health. If appropriately designed and implemented, such NTMs can further important public policy objectives such as ensuring consumer safety and promoting public health. Our intention is not to suggest that they be rolled back, but instead to highlight their prevalence and to highlight the need for detailed assessments of the costs and benefits of different regulatory options.

NTMs are notoriously difficult to measure and quantify. In 2009, a group of technical experts from various international organizations developed a classification of 16 chapters, ranging from technical regulations (Chapter 1), conformity assessments (Chapter 2), pre-shipment inspections (Chapter 3), to rules of origin (Chapter 15) and export-related measures (Chapter 16). The data collection effort is still under way, and results are currently available for a small number of developing countries only. Nonetheless, we review them in this chapter. We also address some previous work that looks directly at the health sector.

One of the rare surveys that studies NTMs was undertaken by the International Trade Centre in 2010 (International Trade Centre 2011), focusing on antimalarial products. The survey was based on phone interviews with 29 importers and 6 exporters of antimalarial products in mostly developing countries. Even though the sample size is rather small, the results clearly show that NTMs are a major obstacle for international trade in health products. The authors found that 60% of interviewees faced burdensome NTMs; only nongovernment organizations and international organizations did not report major NTMs. The most commonly reported NTM related to product registration and inspection requirements. Almost half of NTMs were perceived as burdensome because of delays in administrative procedures, high fees and charges, as well as lack of transparency and necessity for bribes. Several cases were reported in which the product registration took several months or even 1 year. Inspection at customs seems to take a long time due to congestion in the port and insufficient capacity of customs. Furthermore, many respondents reported that additional charges and taxes other than customs duties had to be paid, ranging between 5% and 10%. Finally, high transportation costs between or within countries increase costs of drugs. The International Trade Centre's survey on antimalarial drugs illustrates how NTMs add substantially to the final price of health products.

More anecdotal evidence for NTMs comes from different country cases. For example, Nigeria bans the import of various pharmaceutical products. The ad valorem tariff in that case is effectively infinite on the covered products. Of particular concern is the fact that the prohibition list includes chloroquine, a drug used in the prevention and treatment

of malaria, as well as various antibiotics and deworming treatments. All of these products have special significance in terms of health outcomes in a developing country like Nigeria. The rationale for the import bans is unclear, but there is likely to be a political economy motivation.

Mehta (2005) reports findings based on interviews with 10 pharmaceutical enterprises in India. The firms produced bulk drugs (intermediates and active pharmaceutical ingredients, A2 in our classification) and finished formulations in various dosage forms (A1 in our classification). They exported to developed countries and developing countries. The firms seemed to suffer from various kinds of NTMs in overseas markets, including company registration, product registration, World Health Organization–Good Manufacturing Practice certification, packaging and labeling requirements, import bans, antidumping measures, and pre-shipment inspection. The incidence of NTMs varied across export markets. In developed countries, pharmaceutical producers in India were mainly confronted with one main type of NTM (company and product registration), while in developing and transition economies, various NTMs had to be overcome. Furthermore, the companies reported that compliance with NTMs involved considerable financial costs and time. It is important to stress that although some of these NTMs may have legitimate public policy objectives, others, like import bans and antidumping duties, are firmly rooted in the protection of markets, not people.

The newly updated, though only partially complete, *United Nations Conference on Trade and Development (UNCTAD) Trade Analysis Information System (TRAINS)* database makes it possible to give more systematic insights into these kinds of questions. We take the example of pharmaceutical products as the most useful implementation of new data, the NTM-Map database is organized at the two-digit level. Of course, pharmaceuticals are heavily regulated in most jurisdictions, and important public policy objectives are furthered by many such regulations. Nonetheless, the prevalence of NTMs is striking. Taking the sector as a whole, 32 of the covered countries report that 100% of pharmaceutical imports are covered by some kind of NTM. Only 13 report a coverage ratio of less than 100%. Of those 13, coverage ratios range from 1% in Cote d'Ivoire to just under 100% in Uruguay, with typical numbers in excess of 50%. This preliminary analysis indicates that NTMs are very common in most countries in the pharmaceutical sector.

It is important to look at the type of NTMs being used, however. Some may be important for public health and consumer protection, at least if well administered, while others may be more protectionist in intent. The NTM-Map database distinguishes five types of NTMs: sanitary and phytosanitary measures (SPS), technical barriers to trade (TBTs),

customs formalities, contingent protection (antidumping, safeguards, and countervailing duties), and quantity control measures (such as licenses and quotas). Of these, clearly the first two are potentially the most relevant to issues such as consumer protection.

Table 15.6 presents a breakdown of each economy's NTMs, showing coverage ratios for the five categories identified in the previous paragraph. SPS and TBT measures are typically the most prevalent, which could be in line with the public interest if the measures are appropriately designed and administered. Indeed, the absence of these measures in some countries (such as Cote d'Ivoire, Guatemala, and Senegal) is a cause for concern. There need to be adequate quality controls in place to ensure that pharmaceuticals, whether locally produced or imported, are safe and effective.

**Table 15.6 Percentage of Imports by Value Affected by Listed Nontariff Measures, latest available year, World Integrated Trade Solution – Trade Analysis Information System**

	SPS (%)	TBT (%)	Customs (%)	Contingent Protection (%)	Quantity Control (%)
Afghanistan	0	100	0	0	31
Argentina	96	100	97	0	100
Benin	0	85	85	0	100
Bolivia	78	100	0	0	0
Brazil	100	100	54	0	100
Burkina Faso	100	74	100	0	0
Cape Verde	0	100	0	0	100
Chile	86	100	64	0	0
China, People's Republic of	0	100	0	0	66
Colombia	91	100	14	0	100
Croatia	16	100	5	0	2
Cuba	40	61	0	0	61
Côte d'Ivoire	0	0	1	0	0
Ecuador	81	100	0	0	0
El Salvador	100	100	0	0	0
Estonia	19	100	8	0	2

*continued on next page*



**Table 15.6** *continued*

	SPS (%)	TBT (%)	Customs (%)	Contingent Protection (%)	Quantity Control (%)
European Union	28	100	4	0	1
Gambia	0	100	0	0	0
Ghana	100	100	100	0	0
Guatemala	0	0	0	0	0
Guinea	100	100	100	0	0
Honduras	73	0	0	0	0
Hong Kong, China	11	100	0	0	11
India	70	100	0	1	0
Kazakhstan	100	99	0	0	75
Malawi	0	100	0	0	0
Mali	74	100	100	0	100
Mexico	100	100	0	0	0
Nepal	100	100	0	0	0
Nicaragua	1	100	0	0	0
Niger	0	92	100	0	100
Nigeria	0	100	98	0	83
Pakistan	0	96	0	39	100
Panama	3	95	0	0	0
Paraguay	94	95	55	0	0
Peru	89	93	0	0	6
Russian Federation	0	100	100	0	100
Rwanda	100	100	0	0	100
Senegal	2	0	100	0	0
Sri Lanka	100	100	100	0	0
Tajikistan	100	100	0	0	1
Togo	0	89	0	0	0
Turkey	100	96	0	0	0
Uruguay	57	100	40	0	54
Venezuela	83	99	0	0	0

SPS = sanitary and phytosanitary measures, TBT = technical barrier to trade.

Source: Authors.

The other categories of NTMs are more troubling from an access and efficiency point of view. Quantity controls, such as licenses and quotas, are applied by a number of countries. Although licensing may be appropriate as a way of ensuring quality control, the risk is that quantity control measures can be used to protect the domestic market for incumbents, or reduce efficiency and access considerably. This area is perhaps one that needs attention going forward. Customs formalities also stand out in some countries. In line with recent advances in trade facilitation, there is a clear rationale for streamlining customs formalities. Although administration of SPS and TBT measures may require some additional formalities at the border, they should be kept as light as possible. Finally, Pakistan stands out for its extensive use of contingent protection measures against foreign pharmaceuticals. There is no public health rationale for these NTMs, and they are much more likely to be protectionist in intent and effect.

Even though we lack systematic empirical evidence on NTMs for health products in all countries, the studies demonstrate the importance of NTMs. It seems that health products in developing countries are subject to these additional trade barriers. The presence of numerous NTMs translates into additional large costs for importers and patients. We conjecture that import duties are only a small fraction of the costs that are involved in importing health products. To ease trade in health products, the reduction of NTMs is as important as tariff elimination.

Overall, we have strong evidence that tariffs and NTMs both considerably undercut some countries' ability to move forward on SDG 3. The effect of tariffs and NTMs on health products is to push prices up, and limit availability on the domestic market. There is no health rationale for putting in place tariffs that make it harder for consumers to access important health-related goods. Indeed, the opposite is true: increased openness would undoubtedly result in lower prices and improved availability, which would help promote improved health outcomes. Some NTMs might be justified to protect public health. However, many NTMs seem to be more burdensome than necessary, and even necessary NTMs need to be administered in an efficient and transparent way. As a result, access to health products is more expensive, delayed, or impossible. We still lack systematic data to quantify combined impact of tariffs and unnecessary NTMs. However, we can certainly state that both significantly hinder access to health products and are thus bad for health.

## 15.3 Case Study 1: Vaccines

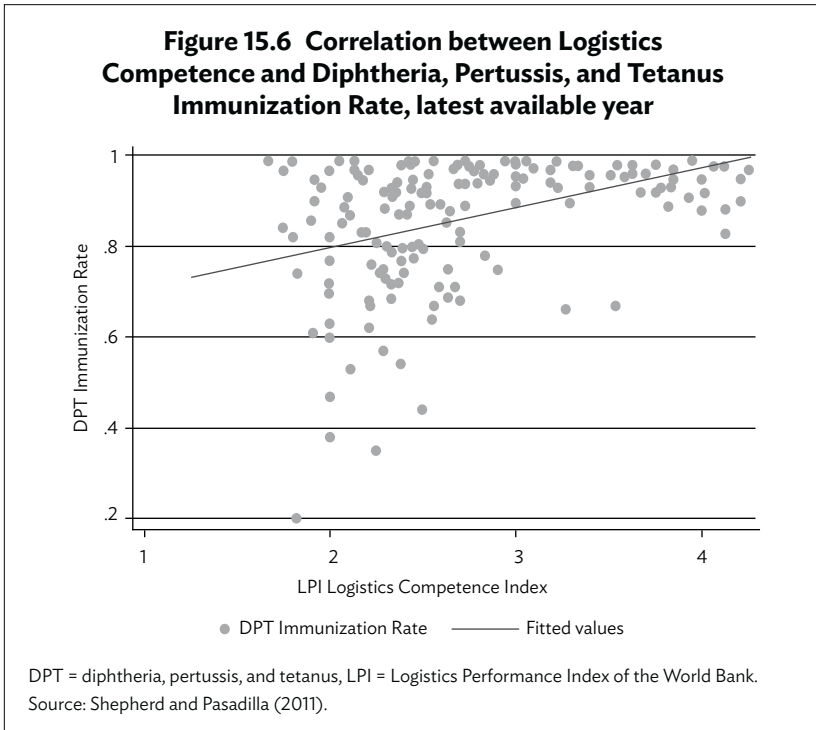
The previous section showed that a variety of countries continue to apply active trade policies to health-related products, and it argued that the result would be to decrease availability and increase cost, which is a negative outcome in terms of SDG 3. So what do the data say about trade policy and health outcomes? This section provides some basic exploratory analysis, focusing on the example of vaccines.

The lens for looking at trade and vaccination rates as a health outcome is logistics, an internationally traded service.<sup>1</sup> The rationale for expecting a connection between the two is that vaccines require careful handling if they are to be moved from port or factory to the hinterland in a usable state. To measure trade policy, the World Bank's Logistics Performance Index (LPI) is used, specifically the subindex measuring the competence and quality of logistics services—a variable that should be linked to trade policy. Results are presented using the immunization rate for diphtheria, pertussis, and tetanus, but similar conclusions follow if the measles immunization rate is used instead.

Figure 15.6 shows the association between the two variables. The line of best fit is upward sloping, in line with the contention that better logistics and trade facilitation performance is associated with better handling of vaccines, which in turn increases the immunization rate. The association is statistically significant at the 1% level ( $R^2 = 0.16$ ). Moreover, the association between these two variables remains strong even when confounding influences are accounted for. Shepherd and Pasadilla (2011) report results from an OLS regression of the immunization rate on the LPI logistics competence index, with a set of control variables including per capita gross domestic product (GDP), the percentage of GDP spent on health, and an index of government effectiveness from the World Governance Indicators. The coefficient on the LPI remains statistically significant at the 1% level. In addition, an interaction term with per capita GDP is negative, which indicates that the association between logistics performance and the vaccination rate is stronger in lower-income countries. These results hold even if a dummy is introduced for sub-Saharan African countries, the region where vaccination is most problematic and logistics weakest. The evidence in this case connecting better trade policy—in this case improved logistics and trade facilitation—with improved health outcomes in terms of SDG 3 is strong.

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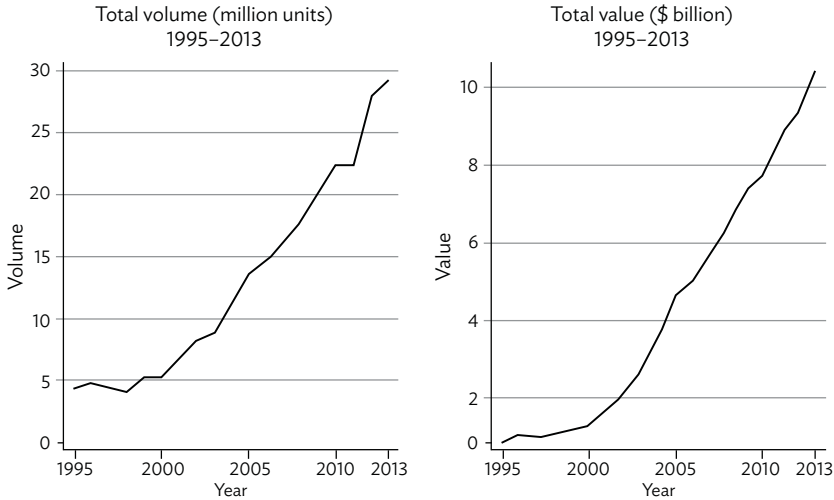
<sup>1</sup> This section draws on Shepherd, B., and G. Pasadilla. 2011. Trade in Services and Human Development: A First Look at the Links. In *Service Sector Reforms: Asia-Pacific Perspectives*, edited by P. Sauve, G. Pasadilla, and M. Mikic. Tokyo: Asian Development Bank Institute.



## Case Study 2: Insulin

Trade openness is typically a necessary, but not sufficient, condition to ensure that prices are lower compared with a closed regime. In the field of pharmaceuticals, prices are often regulated and/or the pharmaceutical companies enjoy monopoly power. In this subsection, we would like to study the case of insulin, which is the main drug to counter diabetes. As diabetes has become a major public health problem around the world, insulin trade has also increased rapidly. In contrast to most other drugs, insulin has two dedicated HS subheadings. Most insulin products are traded under HS 300331 “medicaments containing insulin (not in measured doses or put up for retail sale).” HS 300431 covers medicaments containing insulin put in packings for retail sale, for which international trade is more than 99% (in value terms) compared with international trade of HS 300331. For our analysis, we will therefore only study trade flows and tariffs for HS 300431.

**Figure 15.7 Evolution of Volumes and Values of Harmonized System Code 300431, 1995–2013**

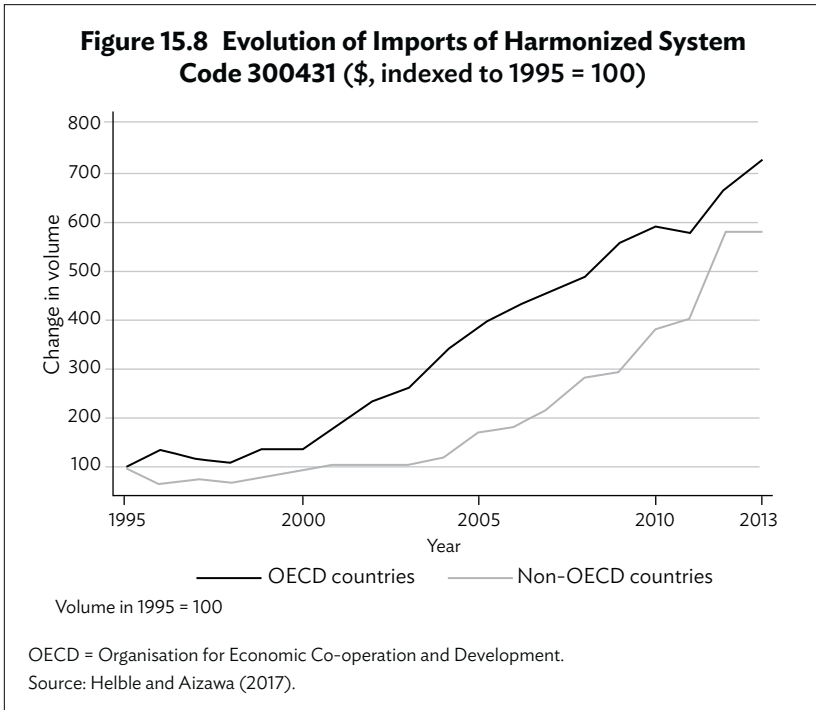


Source: Helble and Aizawa (2017).

As we can see in Figure 15.7, trade in insulin has increased drastically over the last 2 decades, both in terms of volume (kilogram) and value (US dollars). The expansion is particularly marked after 2000.

Figure 15.8 illustrates the import values of medicaments containing insulin among Organisation for Economic Co-operation and Development (OECD) countries and non-OECD countries, setting the value in 1995 as 100. The need for insulin appears to be growing in both country groups. However, whereas OECD countries started to import much more from 2000 onward, non-OECD countries followed only a few years later. From 2000 to 2013, insulin imported in value terms by OECD countries grew by 13.96% annually while that imported by non-OECD countries grew by 15.05%.

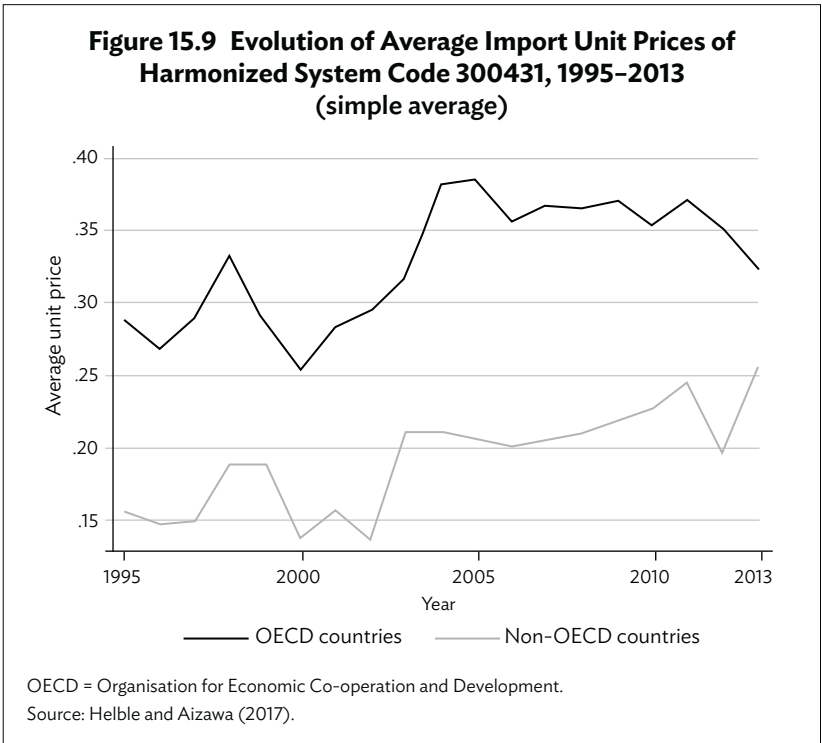
The global insulin market is dominated by three major pharmaceutical companies: Novo Nordisk, Eli Lilly, and Sanofi-Aventis. However, more and more local manufacturers in off-patent countries have become active in the market, especially in the People’s Republic of China, India, and the Russian Federation. The insulin medicines produced by different producers yield comparable health



outcomes. However, the prices charged by different producers and across countries differ considerably. Figure 15.9 shows the evolution of the average landed unit prices<sup>2</sup> for HS 300431 coming from OECD countries and non-OECD countries. We observe that the price for insulin imported from OECD countries is substantially and continuously higher compared with the price levied by producers in non-OECD countries.

The source of the traded insulin, however, is only one determinant of the price. Helble and Aizawa (2017) analyze the trade and prices of insulin for 186 importing countries between 1995 and 2013 and study various determinants explaining the price differences across countries and years. The authors find that pharmaceutical companies systematically apply price discrimination. In other words, the higher

<sup>2</sup> The unit price is defined as the ratio between value and weight. In the case of insulin, the weight is in kilograms. Unit values are commonly used in the trade literature as a proxy for prices per unit.



the national income per capita, the higher the price for insulin. More interestingly, the authors find evidence that market forces attenuate the potential for discriminating prices fully. Their study shows that the greater the number of sources a country uses to import insulin and the larger the volume, the lower the price tends to be. In addition, institutional factors seem to play a role. In countries where most of the expenditure is out-of-pocket, prices seem to be higher, indicating that atomistic buyers have less negotiating power. Finally, lower tariffs appear to have a significant effect on prices.

Overall, the study shows that trade has become a vital instrument to fight diabetes through improving insulin availability across the world. However, an open trade regime is not enough to guarantee low prices. Pharmaceutical companies often attempt to discriminate prices according to income levels. Governments can counteract by enlarging the pool of source countries and by building up health systems that lower out-of-pocket payments. This example shows that trade can be an important force in promoting improved health outcomes, but of course it

cannot succeed alone; general health policy is vital. The key, as explored in this chapter, is in getting the two to work productively together.

## 15.5 Conclusion and Policy Implications

This chapter has provided a first look at one important non-income linkage from a more open trading system to the SDGs, specifically SDG 3, which deals with health. There is clear evidence that developing countries apply tariffs and NTMs that have the effect of increasing prices and decreasing availability of health-related products such as pharmaceuticals, vaccines, and medical equipment. The case for liberalizing trade in these products is strong. In addition, there is compelling evidence that improving trade facilitation performance—using the WTO’s Trade Facilitation Agreement as a starting point—could be linked to improved handling of health-related products such as vaccines, which in turn would boost usage. The case of insulin showed that trade is key for the supply of insulin to patients across the world. Studying the price differences across countries, we observed that the price of insulin has various determinants. Pharmaceutical companies typically charge higher prices in markets with higher per capita income. The level of competition and size of the market are additional factors that influence the final price. Government can try to leverage the competition between manufacturers as well as their purchasing power to bring down the price of insulin. Building up health systems that lower out-of-pocket payments is another option to make insulin more affordable to patients.

One area of tension for trade and health outcomes is the protection of intellectual property rights. That protection can promote innovation by pharmaceutical companies, which, in turn, can improve patient outcomes. But market size effects combined with the very high development costs for new medications mean that even strong protection of intellectual property rights has proved insufficient to generate treatments for some common developing country ailments like malaria. That said, private sector funding through foundations is changing that position somewhat, by providing incentives for development-relevant drug research.

It is important to remember that the principal constraint in terms of improving people’s health in developing countries is the weakness of the health services sector and delivery systems. For many conditions, medicines are available and off-patent, which means they can be produced quite cheaply, including by developing country manufacturers of generics in countries such as India and Brazil. Facilitating the movement of generic drugs to poorer developing countries is an



important health policy objective, but one that needs to be backed up by public and private sector spending on health care, including through the development of delivery infrastructure and professional services. We therefore need to stress the importance of complementary policies such as infrastructure and human resources development, as an adjunct to a liberal trade policy in relation to health products.

Although trade has a relatively low profile in the SDGs and their companion targets, it is by no means absent from the package of measures available to policy makers to promote the SDGs. Trade economists need to do more to show that trade can benefit sustainable development through non-income channels. Work on liberalization of environmental goods and services is another important example from outside health: by the same reasoning as was presented here, liberalization in these sectors can directly help achieve the SDGs by promoting sustainability. Future policy research could usefully concentrate on identifying more examples like health and the environment—areas in which trade can promote sustainable development through non-income channels. Similarly, analysts in other areas featured more prominently in the SDGs should be looking to include trade in the conversation on how best to promote sustainable and inclusive growth.

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# 16

## Trade in Health Services

*Rupa Chanda*

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### 16.1 Introduction

Good health is integral to individual happiness and well-being as well as overall economic and social progress. Healthy populations live longer and are more productive. Hence, any efforts to promote sustainable development, i.e., to improve the quality of life of all people within the given resource and capacity constraints of our world are necessarily linked directly and indirectly to health conditions and outcomes. This link runs in both directions. While health is a key goal of sustainable development, starting from the very first principle of the Rio Declaration, which states, “Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature,” health in turn also contributes to sustainable development by providing human capital for growth, by stimulating savings and investment, and by enabling individuals and communities to benefit from and participate in the development process. Health plays an integrating role across the economic, social, and environmental dimensions of sustainable development and also within each of these elements.

While the two-way link between health and sustainable development is well accepted, the relationship between trade and sustainable development remains much debated. Empirical evidence across developing countries is mixed, with some benefiting from greater participation in world markets in terms of gaining new markets, obtaining lower product prices, better quality, increased scale and choice of products, and others experiencing displacement of jobs and production and greater divergence in outcomes across different sectors and players within their economies. It is thus well recognized that the relationship between trade and sustainable development is complex and multifaceted, shaped by country-specific characteristics and the prevailing regulatory and policy environment. The triad between health, trade, and sustainable development is thus complex, involving the impact of international agreements, trade liberalization,

and deregulation on health outcomes and access to health products and services and consequently development objectives, the intermediating role of health in linking trade with sustainable development goals, and the role of development conditions in shaping the impact of trade on health and vice versa. Further, the nature of the relationship varies depending on the specific segment under consideration in the health sector.

This chapter focuses on one part of the above triad, i.e., the intersection of trade in health services, which is a specific segment within the broader health sector, and sustainable development goals. As the pathways connecting trade, health, and development are many, the chapter specifically focuses on one aspect of this linkage—the impact of health services trade on the realization of the Sustainable Development Goals (SDGs) and the various modalities through which this impact may occur. The focus on health services is motivated by the fact that effective health services form the backbone of health interventions. Accessibility, quality, capacity, organization, availability of human and physical resources, and equity in the provision of health services are essential for a health-care system to deliver desired health and related sustainable development outcomes. The focus on the intersection of health services and trade is motivated by the growing globalization and tradability of services and the increasingly important role played by the services sector and services trade in the growth and development process of economies. Services exports have risen from \$396 billion in 1980 to \$4.7 trillion in 2013 and can help provide key intermediate inputs such as transport and communication, enhance economy-wide competitiveness and productivity, and improve access to basic services and thus in alleviating poverty.<sup>1</sup>

Within the services sector, health services have undergone significant globalization, with growing cross-border investment flows, mobility of health professionals and patients across borders; the use of information and communication technologies to deliver cross-border services; and the transfer of ideas, research, management skills, and know-how between countries. International trade in health services is thus increasingly creating possibilities for the health sector to contribute to economic and social development with implications for equity, efficiency, and quality, which are relevant in the context of the SDGs. There is thus a need to understand the implications of globalization of health services for realizing social and developmental objectives and the

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<sup>1</sup> UNCTADSTAT. <http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=17648> (accessed 15 March 2016).

potential trade-offs that may arise between these goals and commercial considerations. Such an understanding would enable governments to adopt policies that help balance competing concerns of efficiency and equity in the context of health services. It would also provide insights into how the international community can take advantage of the development benefits arising from trade in health services while addressing any adverse effects of such trade (Chanda 2001a, 2001b).

Keeping in view this context and motivation, this chapter is outlined as follows. Section 16.2 following this introduction highlights those SDGs that are directly or indirectly relevant to health. It also briefly reviews existing work that relates health targets and indicators to the SDGs and highlights the perspective of the World Health Organization (WHO) on this relationship. Section 16.3 discusses the different modes through which trade in health services takes place and their bearing on the realization of relevant SDGs. The discussion highlights the positive and negative implications of this trade and focuses on several segments and modes, such as medical value travel, telemedicine, hospital services, and mobility. Section 16.4 provides some country-specific examples to illustrate the channels through which trade in health services can affect sustainable development. Section 16.5 concludes by highlighting policies and steps that can be taken at the national, regional, and multilateral levels to leverage health services trade for meeting sustainable development objectives.

## 16.2 Relating SDGs and Health Services

The SDGs are a set of crosscutting, interlinked goals, some of which directly or indirectly relate to health.<sup>2</sup> This section provides an overview of the SDGs that are relevant in the context of health services to provide a context for the discussion that follows in later sections regarding the various pathways through which trade in health services affects development objectives and the nature of this impact.

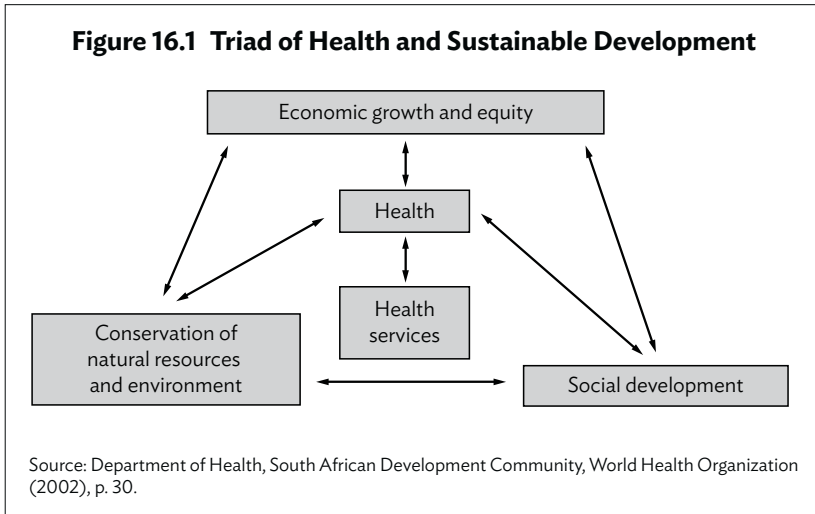
Although there has been some criticism that compared with the Millennium Development Goals (MDGs) there is less focus on health under the SDGs, a closer examination indicates that health underpins many of the SDGs given the latter's broad and integrated nature. The one SDG that specifically pertains to health is SDG 3. Its aim is to

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<sup>2</sup> See ICSU and ISSC (2015) and the United Nations' Sustainable Development Goals at <http://www.un.org/sustainabledevelopment/sustainable-development-goals/> for the various SDGs (accessed 14 February 2017).

ensure healthy lives and promote well-being for all at all ages. The subgoals within SDG 3 include specific health-related indicators that highlight the importance of health both as an input and as an outcome in the development process. Two of these subgoal specific indicators that are of direct relevance to the discussion on health services trade are SDG 3.8 and SDG 3.9c. The former aims at achieving universal health coverage, including financial risk protection and access to quality essential health-care services. The latter aims at substantially increasing health financing and the recruitment, development, training, and retention of the health workforce in developing countries, in particular least developed countries and island states. Trade in health services can play a role, positive or negative, in the realization of these subgoals through its impact on the access, quality, affordability, and equity in health services, via channels such as foreign exchange earnings, through the intra-health sector distribution of resources between different segments and players for investments in human resources capacity and infrastructure, and through channels such as cross-border transfer of knowledge, technology, and manpower. Trade in health services can thus potentially both directly and indirectly through its many externalities influence the attainment of SDG 3 and specifically the two aforementioned subgoals.

Broadening the focus beyond SDG 3, there are also SDGs where health is itself a contributor to the attainment of the goal. For instance, SDG 8, which seeks to promote sustained, inclusive, and sustainable economic growth; full and productive employment; and decent work for all, is necessarily underpinned by existing health conditions and health systems and the availability of and access to health services. Again, trade in health can play an important direct and indirect role in shaping these conditions through its impact on the growth of the health sector and associated employment creation, by shaping the possibilities for technology transfer, knowledge spillovers, and resource mobilization, and through its impact on standards and quality, among other channels. There are also SDGs where health itself benefits from the progress toward those goals such as SDGs 1 and 2, which aim at ending poverty, promoting nutrition, and ensuring food security among other objectives. Here, trade in other sectors, not necessarily health services, such as trade in food and agricultural products, pharmaceuticals, and basic goods would influence the attainment of these development goals. At the broadest level, SDG 3 underpins the crosscutting role of health (and for that matter many other sectors such as education) given its focus on the reduction of inequality within and among countries. Access to health care is not only essential for realizing this SDG but is also likely to improve in



the course of realizing this goal. Once again, trade in health services can influence equity outcomes within the health sector by shaping the access to quality and affordable health services.

Figure 16.1 illustrates the central role of health services in the nexus that connects health and sustainable development. It also implicitly captures the role that health services trade can play within this nexus.

The WHO perspective on the health and sustainable development goals nexus and the bearing that trade has on this link is evident from various WHO reports and statements. The latter indicate the WHO's view that there exist many synergies across the various SDGs that are relevant to health. These include synergies that are direct such as between health, education, nutrition, social protection, and conflict, and synergies that are indirect such as between sustainable consumption and health. In the WHO's view, the SDGs provide a basis for enhancing governance for health at the multilateral, regional, and national levels. These include policies in a wide range of areas, in particular, trade, migration, and intellectual property rights, which can impact positively or negatively on health. In this context, governance frameworks such as the General Agreement on Trade in Services (GATS), comprehensive regional and bilateral preferential agreements that include services and investment flows, and mobility arrangements between nations that cover various facets of health services trade provide a tangible basis for examining the implications of health services trade for the SDGs. Hence, although health is seen as a public good sector and trade is seen

as a commercial activity that can be inimical to the interests of equity and affordability that are expected to govern the functioning of such social services, the WHO perspective as well as academic literature in this domain suggests that the issue should be seen in a more nuanced and balanced manner.<sup>3</sup> Free trade in health services (and also health products) could potentially improve access to health care in developing countries, provided there are supporting regulatory and infrastructural conditions. Barriers to health services trade can thus impede the realization of the SDGs. The following section outlines what these potential benefits could be and associated risks that must be recognized and addressed through appropriate policies and regulations.

## 16.3 Modalities and Implications of Health Services Trade

Globalization of health services has taken many forms and has been driven by a variety of factors including advances in information and communication technologies, growing ease of travel and mobility across countries, increased private sector participation in health care, liberalization of foreign direct investment, growing cross-border collaborative arrangements in health sector training, research and technology transfer, and growing demand for health services due to rising incomes and demographic trends. The discussion that follows briefly outlines the various modes by which health services trade takes place and the resulting impact on development outcomes, including in particular the SDGs noted above.<sup>4</sup>

### 16.3.1 Mode-Wise Trade in Health Services

GATS under the World Trade Organization (WTO) provides the framework for understanding trade in health services. As per GATS, there are four modes by which services are traded—(i) cross-border delivery or mode 1, which refers to the physical delivery of a service across borders such as in transport or business process outsourcing services; (ii) consumption abroad or mode 2, which refers to the movement of consumers to other countries to avail of services; (iii) commercial

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<sup>3</sup> See, WHO (January 2015), WHO (October 2015), WHO (January 2002) and UN (May 2012) for discussion on the SDGs and health.

<sup>4</sup> Much of the discussion in this section on the various modes of health services trade draws upon Chanda (2001a and 2001b).



presence or mode 3, which refers to the establishment of a commercial entity in the form of a branch, subsidiary, franchise, affiliate, or joint venture and involves the movement of capital; and (iv) movement of natural persons or mode 4, which refers to the temporary cross-border mobility of service providers without the intent to become a citizen or permanent resident in the other country. All four modes of GATS are pertinent to health services trade.<sup>5</sup>

*Cross-border delivery or mode 1* in health services involves the shipment of clinical and data services captured in diagnostic reports and samples channels through traditional mail channels and, increasingly, the electronic delivery of health services using interactive, audiovisual, and data communications for diagnostics, second opinions, lab testing, surveillance, consultations, transmission of and access to specialized data, records, and information, and continuing medical education and upgrading of skills. Within mode 1, telehealth, which is the “integration of telecom systems into the practice of protecting and promoting health” and telemedicine, which is the incorporation of these systems into curative medicine are growing in importance. According to a recent report, the global telehealth market was valued at \$2.2 billion in 2015 and is expected to grow at a compound annual growth rate of 24% from 2015–2020 to reach a market size of \$6.5 billion by 2020.<sup>6</sup> Countries are engaged in a variety of telehealth services such as telepathology, teleradiology, and telepsychiatry and many cross-border telemedicine initiatives have emerged. For instance, telediagnostic, surveillance, and consultation services are provided by United States (US) hospitals to hospitals in many Gulf countries and to some countries in Central America. Telepathology services are provided by India’s doctors to hospitals in Nepal and Bangladesh, and telediagnostic services are provided by hospitals in the People’s Republic of China’s coastal provinces to patients in Taipei, China; Macau, China; and some Southeast Asian countries. There is also considerable scope for related services such as medical transcription, which are being increasingly outsourced to developing countries such as India to reduce costs. With further advances in telecommunications technologies and declining costs of electronic delivery, the scope for mode 1-based trade in health services is likely to grow, not only among developed countries but also increasingly from developed to developing and from more advanced developing to poorer neighboring countries.

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<sup>5</sup> See WTO (January 2013) for an introduction to the GATS framework. See the full GATS text at [https://www.wto.org/english/docs\\_e/legal\\_e/26-gats.pdf](https://www.wto.org/english/docs_e/legal_e/26-gats.pdf) (accessed 14 February 2017).

<sup>6</sup> PRNewswire. 2015. <http://www.prnewswire.com/news-releases/global-telehealth-market-growing-at-24-cagr-to-2020-521726311.html> (accessed 14 February 2017).

*Consumption abroad or mode 2* in health services is the most prevalent and long-standing form of trade in health services. It involves the movement of consumers from one country to another for purposes of diagnostics, treatment, and rehabilitation and follow-up services. The estimates for the number of medical tourists globally per year vary tremendously depending on the source, from a lower bound of 5 million to an upper bound of over 40 million, with intermediate estimates putting the number at around 14 million per year. The financial value of mode 2 in health services trade is difficult to pin down but conservative estimates place this in the range of \$60 billion to \$100 billion annually. According to McKinsey, around 25% to 30% of these patients are expatriates, another 30%–35% are seeking emergency care, and the remainder are patients who go abroad to seek treatment (Horsfall and Lunt (2015: 29–31). There is much debate on these numbers and values, as highlighted in Helble (2011), but what is well accepted is the large number of patients who are seeking treatment in other countries and the growing importance of the medical tourism industry.<sup>7</sup>

Mode 2 in health services is driven by differences in cost, quality, and availability of treatment across countries; as well as factors such as natural endowments, existence of alternative medicines and treatment procedures, long waiting lists for treatment in the source country; and cultural, linguistic, and geographic proximity between sending and receiving countries. It occurs among developed, developing, and between developed and developing countries. It is common for affluent patients in developing countries to seek specialized high quality treatment overseas in developed country hospitals or in neighboring developing countries with superior health care standards. It is also common for persons in developed countries to seek quality treatment at a fraction of the cost in developing countries, or to seek alternative medicines and treatments and take advantage of natural endowments in developing countries. For instance, patients from developed countries such as the US and the United Kingdom can get bypass surgeries or transplants done at one-fourth or one-fifth of the cost in high quality corporate and super-specialty hospitals in developing countries such as India, indicating the tremendous scope for gains from trade due to cost differences. With escalating health-care costs and aging populations in developed countries and increased portability of health insurance

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<sup>7</sup> There is also trade in related services under mode 2, such as in medical education and training services, which involves movement of health professionals and students for receiving medical and paramedical education and training abroad. Some developing countries such as Thailand and India provide technical assistance in medical education services by reserving seats for students from other developing countries.

following opening up of the insurance sector in many countries, consumption abroad in health services is likely to grow in the future. Glinos et al. (2010) capture this diversity in cross-border movement of patients in terms of the motivation for treatment abroad and the financing of such treatment.

Health services can also be traded through *commercial presence or mode 3*, wherein hospitals, clinics, diagnostic and treatment centers, and nursing homes may be established across countries. There may be joint ventures, alliances, and management tie-ups between health-care organizations across countries and regional networks of health-care providers that may be engaged in delivering health care through modes 1 and 2 above. Such arrangements may involve acquisition of facilities, management contracts, and licensing arrangements with some degree of local participation to ensure access to certified and adequately trained local persons and to ensure local contacts and commitment. The growing trend toward commercial presence in health services is evident from the many regional health-care networks and chains that have been formed in recent years. For instance, the Singapore-based Parkway Group has acquired hospitals in Asia and Britain and has created an international chain of hospitals, Gleneagles International, through joint ventures with partners in Malaysia, Indonesia, Sri Lanka, India, and the United Kingdom. It has also set up a dental surgery chain through joint ventures in Southeast Asia. The Raffles Medical Group in Singapore has formed strategic alliances globally by developing triangular business associations with health-care organizations from developed countries, in partnership with host country investors. The aim of such companies is to develop an integrated network of health-care companies offering a range of high-quality and cost-effective health services. This trend has been facilitated by the opening up of foreign direct investment (FDI) in health care and with more and more governments encouraging private sector participation in the provision of health services. There has also been diversification of commercial presence in health services with the spread of managed care and resulting opportunities for commercial presence in management of health facilities and allied services. Some countries are entering into contract-based management and administration of foreign-owned or joint-venture hospitals. There are also emerging opportunities for firms with experience in accreditation, legislation, and medical standards. Another emerging area for commercial presence is in medical and paramedical education with many well-known medical schools of international repute, establishing joint ventures with local medical schools.

Health services can also be traded through the *temporary movement of health personnel or mode 4*, including doctors, specialists, nurses,

paramedics, midwives, technicians, consultants, trainers, health management personnel, and other skilled and trained professionals. Along with mode 2, this mode constitutes an important part of trade in health services today. Both developed and developing countries are engaged in health services trade via mode 4. There are mode 4 exports from developing to developed countries such as from India and the Philippines to countries in the Gulf region or from Cuba to countries in Africa and the Caribbean on short-term contracts. The Middle East is an important host market for a wide range of health professionals from developed and developing countries, including doctors, nurses, X-ray technicians, lab technicians, dental hygienists, physiotherapists, and medical rehabilitation workers.

It is to be noted, however, that much of cross-border mobility of health providers does not constitute mode 4 but rather is permanent migration in search of higher wages, better working conditions, greater exposure and professional development opportunities, and higher standards of living in the destination market. Mode 4 trade in health services is a subset of such movement, which is temporary in nature, usually under bilateral contracts between institutions and/or governments and aimed at addressing shortages such as of nurses or specialists in the receiving market (Kingma 2007). However, it is difficult to estimate the size of mode 4 trade in health services as such statistics, which clearly delineate temporary from permanent cross-border movement in the health sector and which are aligned with the guidelines laid down in the Manual on Services of International Trade in Services (MSITS) (United Nations 2010) are not readily available.<sup>8</sup>

Table 16.1 summarizes the four modes by which health services may be traded.

Across all 4 modes, the regulatory and policy environment as well as existing physical and human resources capacity are very important in determining the extent of health services trade. For instance, trade in mode 1 is affected by restrictions on transfer of personal data under data privacy and patient confidentiality regulations and by internet

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<sup>8</sup> Under MSITS (United Nations 2010), mode 4 covers the supply of services through the presence of foreign service suppliers either in their individual capacity or on a contractual basis or as intra-corporate transferees (i.e., either as direct employees of a foreign service supplier or on contract through their affiliated firms). Such movement must be temporary (though this period is not specified) and the purpose should not be to enter the permanent labor market or for citizenship to qualify under mode 4. However, immigration statistics as currently collected do not provide for a clear distinction between mode 4 and larger cross-border mobility in different services. Further, data on health services are scarce, making it even more difficult to estimate the value of mode 4 trade in this sector.

**Table 16.1 Characterizing Trade in Health Services by GATS Modes of Supply**

	Trade in Health Services	Trade in Ancillary Services	Trade in Goods Associated with Health Services
<b>Mode 1: Cross-border supply</b>	Telemedicine, including diagnostics, radiology	Distance medical education and training	Health-care equipment
		Medical transcription, back office	Drugs
		Medical research tools and databases	Medical waste
		Medical insurance	Prosthesis
<b>Mode 2: Consumption abroad</b>	“Medical tourism,” i.e., voluntary trip to receive medical treatment abroad	All activities associated with health tourism (e.g., transport, hotel, restaurant, paramedical, local purchases, etc.)	
	Medically assisted residence for retirees	Local medical education and training of foreign nationals	
	Expatriates seeking care in country of residence		
	Emergency cases (e.g., accident when abroad)		
<b>Mode 3: Commercial presence</b>	Foreign participation or ownership of hospital/clinic or medical facilities (e.g., capital investments, technology tie-ups, collaborative ventures)	Foreign-sponsored education or training centers	
		Foreign-sponsored medical research facilities	
<b>Mode 4: Presence of natural persons</b>	Movement of doctors and health personnel for the purpose of commercial medical practice	Movement of doctors and health personnel for other purposes (e.g., education or training)	

GATS = General Agreement on Trade in Services.

Source: Author's construction.

connectivity, bandwidth, and costs. Mode 2-based trade in health services is affected by issues of insurance portability, cross-border liability, and visa and foreign exchange regulations. Mode 3-based trade in health services is mainly determined by FDI regulations and associated conditions on foreign investors as well as the availability of physical and other infrastructure and policies governing medical equipment and supplies. Mode 4-based trade is affected by immigration and labor market regulations in host countries as well as recognition and licensing requirements. It is the most restricted mode of supply in health services trade and for that matter for all services trade.<sup>9</sup> Thus, clearly, whether and how trade in health services trade affects the attainment of relevant SDGs is partly a function of these aforementioned regulatory and structural constraints and how they affect the availability, quality, cost and distribution of health services, and related outcomes.

### 16.3.2 Developmental Implications: Potential Positives

Trade in health services may have both positive and negative implications for the SDGs.<sup>10</sup> The nature of this impact depends on the specifics of the country and its national health-care system, the regulatory environment governing the health sector and related sectors, the policies adopted to facilitate or constrain this trade, and the associated externalities. The discussion that follows first outlines the potential positive development implications of health services exports and imports across the different modes of supply, both direct and indirect. It then highlights through country examples the nature and significance of this impact.

The standard way in which exports benefit a country is by augmenting their foreign exchange earnings, thereby providing them with macroeconomic stability through the balance of payments. This channel is relevant even in the case of health services, whether it is cross-border delivery of health services through telemedicine, or medical tourism-related foreign exchange earnings or employee compensation and remittances arising from cross-border mobility of medical personnel or

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<sup>9</sup> It is to be noted that health services are one of the least opened services sectors under the WTO due to its public good and social service characteristic. Adlung and Roy (2010) highlight that only 39% of WTO member countries have made commitments in health services compared with 95% in tourism services, 81% in financial services, and 78% in business services. The only other sector with such limited scheduling by member countries is education services, for similar reasons.

<sup>10</sup> The discussion in this section on the potential positive effects of trade in health services draws upon Chanda (2001a and 200b), Adams and Kinnon (1997), Bettcher et al. (2000), and UNCTAD/WHO (1997).

dividends and profits earned from investment overseas. Exports of health services contribute to development resources through the current account of the balance of payments. In all cases, the resources thus garnered can potentially be used toward increasing capacity in the health sector, for improving access to health care and other developmental needs. But far more important than this channel are the additional spillover benefits that trade can give rise to in the health sector and in the wider economy. These externalities may take the form of improved infrastructure, standards, technological upgradation, employment creation, and skilling with associated development implications for equity, access, costs, and quality. For instance, investments in physical infrastructure and human resources associated with telemedicine exports could be leveraged to deliver health services to remote and underserved areas and segments of the population within developing countries, to alleviate human resources constraints in these regions, to enable more cost-effective surveillance of diseases, and to provide affordable, timely, and better quality of diagnostic services in poor countries. Efficiency gains due to telemedicine exports may also help increase the general efficiency of the health-care sector by enabling the use of interactive methods and more rapid and up-to-date services at lower cost. Hence, health services exports through mode 1 and the associated financial and infrastructural resources to support such exports can enable developing countries to address gaps in their health-care system and pursue key sustainable development goals of providing equitable access to health care and improving health outcomes. In a similar manner, exports of health services under mode 2 may not only provide additional resources to improve the health-care system but can also incentivize health-care providers to seek international accreditation to attract foreign patients, to invest in new technologies, skills and specializations, and to raise the overall standards and quality of health care in the country. There could also be spinoff benefits in terms of return migration of expatriate health-care professionals and improved retention of domestic professionals, thereby augmenting the human resources capacity in the health care sector. In the case of mode 4 exports, beyond the foreign exchange earnings from overseas health-care personnel, additional benefits can accrue from the upgrading and exchange of skills and knowledge, development of specialized expertise, and associated improvements in standards and practices upon return to the exporting country.

Thus, across all these modes, health services exports can facilitate the realization of the SDGs through pecuniary and nonpecuniary channels. However, as is evident, these are “potential” and not automatically guaranteed benefits. Much depends on how the resources generated from exports are deployed in the economy, to whom they accrue, who capture

the benefits, and what developing country governments do to leverage and share these resources through appropriate policy instruments to meet development needs more widely. The key to realizing the outlined additional benefits beyond the gains from export earnings is to utilize the capacity, infrastructure, and quality gains resulting from health services exports for the wider benefit of the health-care system.

In a similar way, imports of health services can also aid the realization of the SDGs by alleviating capacity and quality constraints and by improving access to health care. For instance, imports via mode 3, i.e., inward FDI flows in hospitals and diagnostics, provide additional financial resources for investment in the health services sector through the capital account of the balance of payments. Additional benefits could take the form of upgraded quality, standards, and infrastructure; associated inflows of human resources, technology transfer, employment creation, development of skills, and specialization; and an overall improvement in the productivity and standards of associated health establishments, thus also potentially improving access to quality health care. The availability of private capital and development of private health-care establishments could also reduce the burden on government resources and help it to focus on public providers. Affiliations and partnerships with reputed health-care establishments in other countries made possible by mode 3 imports can lead to transfer of technology, management techniques, and best practices.

Likewise, countries that import health services through consumption abroad can also benefit from such trade as mode 2 can be a means to overcome shortages of physical and human resources in their health-care sector and to address their need for specialized and better quality services at affordable prices. According to one study, the US health-care system would save \$1.4 billion per year if only 1 in 10 patients were to go abroad for a limited set of 15 highly tradable, low risk treatments (Mattoo and Rathindran 2005: Table 4, p. 20). Such imports can also ease the stress on their health insurance systems and reduce the waiting time for treatment. Telemedicine imports under mode 1 can similarly provide wider access to health services at an affordable price. The nature of development gains is similar across all modes, involving a mix of capacity and quality. Once again, whether there is a wider impact on development goals depends on how the aforementioned benefits are spread among other segments of the economy and how they are leveraged for others not directly associated with health services imports. Thus, much depends on how governments innovatively spread the benefits from health services imports to the wider economy such as through tax policies, regulations concerning access and pricing, and cross-subsidization requirements on the private sector.



### 16.3.3 Developmental Implications: Potential Negatives

As the impact of trade in health services depends on the policy environment and how resources are used and distributed across different segments of the health system, there can also be potential negative effects of such trade, particularly with regard to equity and affordability. Gains in capacity and quality need not necessarily translate into more equitable and affordable access to health services. In the case of each mode of health services trade, this trade-off is possible.<sup>11</sup>

Commercial presence imports of health services can generate resources for investment, create employment, and yield many of the benefits noted above. However, these gains may come at the cost of huge initial public investments that may be needed to attract FDI and also domestic private sector establishments into the sector. Typically, such establishments tend to be super-specialty providers and thus in developing countries the provision of public funds and subsidies in the form of cheaper land or tax concessions or reduced duties on imports of medical equipment and devices to attract foreign commercial presence could implicitly involve a loss of revenues or a diversion of resources from other essential segments such as primary health care or even other development objectives. This diversion would need to be weighed against the aforementioned gains, but there could be a negative effect on equity. Mode 3-based health services imports could result in a greater skew between the public health-care segment and a corporatized segment, which in turn could result in outflow of health personnel (often the best and brightest) from the public to exporting private sector segment, if there is wide divergence in pay, working conditions, standards, exposure, and career progression opportunities. Further, if mode 3 establishments are largely focused on high-end technologies and treatments that do not address the needs of the general population, or if they are too highly priced and thus cater to only the affluent section of the population who can pay out of pocket or to those who are adequately covered by insurance, then such imports would not necessarily address the equity objectives under the SDGs. The argument could be made similarly in the case of mode 3 exports as resources invested by domestic providers overseas can potentially reduce resources available for health-care investment domestically, though one would need to weigh this loss against the earnings from providing services in other markets and how they percolate to the wider domestic economy as opposed to being appropriated by the exporters.

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<sup>11</sup> See Chanda (2001a and 200b), Adams and Kinnon (1997), Bettcher et al. (2000), and UNCTAD/WHO (1997).

The possibilities for an adverse outcome are similarly present for the other modes. The basis for this potential negative impact is common. It stems from the fact that there is an opportunity cost to investing resources to enable such exports, which could be at the expense of equity, affordability, and other such development goals. For instance, while mode 1 exports in the context of telemedicine services can have many positive externalities in terms of enabling the telemedicine infrastructure to be leveraged for providing health care to remote and underserved areas domestically and not only for exports, there is always the question of whether the resources invested in telemedicine would have been better invested in basic health-care facilities, for immunization, or curative facilities where there could be a bigger and more direct impact on the poor. There is a possibility that the kinds of technologies invested in for telemedicine exports may be too specialized and thus would serve only a small segment of the population. The cost-effectiveness and affordability of telemedicine facilities for the domestic market would also shape the equity outcome and given the highly capital-intensive nature of this mode, requiring huge investments in telecommunications infrastructure and electricity, the opportunity cost in terms of resource diversion from more directly linked development outcomes can be high.

Exports based on mode 2 can likewise lead to a dual market structure, with a high-quality, expensive, more specialized segment catering to wealthy nationals and medical tourists and a lower-quality, resource-constrained segment catering to lower- and middle-income people at home. Differential pricing policies that may be adopted by exporters under mode 2 could lead to “cream skimming” and squeezing out of domestic patients to cater to higher-paying medical tourists, unless there are requirements to also serve the local population or initiatives to cross-subsidize between high- and low-paying segment (not only between foreign and domestic patients but also between rich and poor domestic patients). If subsidies are provided by the government to set up such facilities that cater to foreign patients, without necessarily ensuring that the resulting benefits highlighted above in terms of better standards and quality of care accrue to domestic patients, then there is again the opportunity cost of public funds being diverted or foregone from other development purposes. These potential negative effects on affordability and equity may arise if the gains are appropriated by the private players and a limited segment of the population. The latter in turn depends on the existing resource conditions, the regulatory frameworks governing such establishments, and the tax and subsidy policies as these factors shape the extent to which the benefits are spread more widely and can avert such inequitable outcomes.

Finally, mode 4 exports of health services can impose costs on developing economies. Even though outflows of health-care personnel in this context are to be distinguished from permanent movement (or brain drain), given shortage of quality human resources in the health sector and publicly funded and subsidized education received by health personnel in many developing countries, such exports can aggravate existing shortages of quality manpower for the home population and may involve a high opportunity cost where these subsidies could have been spent in attaining other development outcomes. Again, these negative equity consequences have to be weighed against the benefits that may arise from foreign exchange earnings, upgrading of standards and training, and various other positives highlighted above for this mode. Whether this balancing can be done or not is again dependent on the existing policies for developing human resources in health care, how returning health professionals are integrated into the domestic health system and their expertise utilized, how the earnings are invested back in the economy, and other such policies affecting resource creation, allocation, and utilization.

Overall, trade in health services is not unconditionally positive. There can be undesirable ramifications for equity and access especially in exporting countries. Whether these trade-offs in terms of increased dualism in resource distribution and access, internal brain drain, or overinvestment in certain segments of care arise or not is contingent on the existing conditions in the health-care sector. It depends on the availability of human and physical resources, the quality of infrastructure, the degree of insurance penetration, pricing and subsidy policies, and, in short, the overall structural and regulatory environment in the health as well as related sectors.

## 16.4 Developing Country Experiences

Trade in health services has both positive and negative implications for the SDGs. The channels for these effects are, however, difficult to trace or quantify as they are mostly indirect, contingent on existing conditions. But several country and regional cases illustrate how trade in health services can enable the realization of the SDGs and also how absent an appropriate policy environment and proactive steps to tap these gains for the wider benefit of the health system and of society at large, trade in health services may have adverse implications for the SDGs.

Several developing countries have proactively promoted exports of health services. Their objective has been not only to earn foreign exchange but to also increase the financial capacity of the overall health-

care system, to generate employment, and to upgrade national health-care infrastructure and standards. The following discussion outlines the experience of several developing countries with trade in health services.

### 16.4.1 Cuba

Cuba is a country that highlights how there can be developmental benefits from health services trade both to the exporting country and to recipient developing countries.<sup>12</sup> Since the late 1980s, Cuba has adopted an export strategy in health services focusing on all four modes. Exports of health services are the most important source of foreign exchange earnings for the country, rising from \$20 million in 1994 to \$30 million in 1998. The government had set a target of over \$8 billion in health services exports, which was around 40% of total export earnings at the time.<sup>13</sup>

Under mode 2, Cuba attracts foreign patients from countries in Europe, the Russian Federation, and from Latin America and the Caribbean to specialized clinics in the country that provide high-quality care at competitive prices. The strategy has aimed at service differentiation, such as focusing on treatment of certain kinds of skin diseases that are incurable in other countries, and on the development of new procedures and drugs such as for pigmentation, retinopathy, and vitiligo. In 1995–1996, more than 25,000 foreign patients came to Cuba for treatment, generating an estimated \$25 million in sales of health services to foreigners, up from \$2 million in 1990. Most of the revenue thus generated was invested back in the domestic health system.<sup>14</sup>

To facilitate exports under this mode, the government has provided for easy payment facilities including payment with credit cards or any convertible currency. Free or subsidized care is provided to patients from some countries. There are also bilateral agreements between the Cuban government and social security institutions of other Latin and Central American countries to facilitate consumption abroad, with rates agreed upon by both parties.

Cuba has further differentiated itself from many other countries by combining health care with tourism. The government has created a

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<sup>12</sup> Much of this discussion on Cuba draws upon Chanda (2001b).

<sup>13</sup> Frank, M. 2014. Cuba Ups Healthcare Sector Pay, Says Medical Exports Earnings to Rise. Reuters. 21 March. <http://www.reuters.com/article/cuba-reform-healthcare-idUSL2NOMI0C920140321> (accessed 14 February 2017); Wasserman and Cornejo (1999).

<sup>14</sup> Feinsilver (2013: 120); UNCTAD (April 1997).

trading company called Servimed to sell combined tourism and health-care packages in target markets that do not have adequate facilities or countries with high costs of treatment. This is done with the help of tour operators and travel agencies.<sup>15</sup> At present, Servimed is providing services to 15 countries, including Algeria, the People's Republic of China, Portugal, Jamaica, Qatar, Surinam, and Ukraine. Services offered include treatment for retinitis pigmentosa, cosmetic surgery, and dentistry. Since 2010, Servimed has been pursuing medical exports for profit with renewed focus under the government's recent attempt to overhaul the country's health-care system and generate revenues from medical tourism and invest the profits in maintenance, repair, and purchase of equipment for public health institutions. The idea is to use medical tourism to generate revenues for development of the national health-care system.<sup>16</sup> Two smaller agencies have also been established in health tourism to provide rehabilitative and convalescent health services through resorts and spas.

The second area of focus has been movement of health personnel. Cuba has adopted a strategy of sending health personnel abroad on short-term remunerated contracts supervised by the Cuban Economic Office. According to the World Bank, in 2010, Cuba had 6.7 physicians per 1,000 inhabitants, the highest in the world. In some cases, exports of health personnel are based on solidarity agreements and contracts with foreign governments to provide manpower.<sup>17</sup> These included physicians, dentists, nurses, and middle-level health technicians. The target markets are typically developing countries with a shortage of health service providers. These include various African countries such as Ghana, South Africa, Mozambique, Zambia, Guinea-Bissau, Angola, poor Central American countries such as Nicaragua, and Middle Eastern countries such as Libya. The rates have been largely subsidized by the Cuban government. Hence, foreign exchange earnings from such mode 4 exports have not been very large given their development assistance nature. In some countries, the government receives oil in exchange for providing personnel. Cuba has become recognized as a global leader in providing health-care services for people in poor and rural areas and disaster zones. According to Cuban officials, professional services

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<sup>15</sup> Even as far back as 1988, Servimed made a profit of \$4 million serving over 2,000 foreign patients. Chanda (2001 b).

<sup>16</sup> See International Medical Travel Journal. 2011. Cuba Relaunches Servimed Medical Tourism Service. 16 December. <http://www.imtj.com/news/cuba-relaunches-servimed-medical-tourism-service/> (accessed 14 February 2017).

<sup>17</sup> Even as far back as 1991, 624 Cuban health professionals and technicians went to 24 countries to provide health services overseas. See Chanda (2001b).

exports by Cuban medical personnel, who number around 37,000 in 77 countries generate foreign exchange of around \$8 billion a year.

In recent years, Cuba has been sending more and more doctors overseas. It exported 11,400 doctors to Brazil. Health-care providers who are sent abroad earn several times more than those serving at home. Compared with a compensation of \$30 per month in Cuba, those serving abroad earn between \$200 to over \$1,000 per month. Recently, the government has increased the salaries for those medical personnel working in programs that provide free eye care to poor residents in Caribbean and Latin American countries. The Cuban Ministry of Public Health has also diversified into activities such as advisory and consultancy services and provision of medical equipment maintenance and medical information services as part of its strategy of exporting professionals in health and allied areas. There have been complaints by local residents that exports of medical personnel are affecting the availability of manpower for the country's free public health-care system. Some doctors who are sent abroad do not return, but this number has not been reported by the government.<sup>18</sup>

Cuba has also focused on establishing itself as an important regional exporter of health services. It has a program for health service exports directed at the countries of Latin America and the Caribbean. It exports consulting services in biotechnology, pharmacy, and provides medical information to countries such as the Dominican Republic and Uruguay in the region and has joint ventures in health services with firms in Argentina, Brazil, Mexico, and Colombia. Cuba also provides telemedicine to countries in the region given its modern technology and infrastructure investments in this area.

Through these different forms of health services exports, Cuba has been successful in realizing several development objectives. These include the goals of providing employment to qualified health service providers, making use of excess capacity in the sector to make medical and pharmaceutical products, generating resources for investment in health-care infrastructure, and finding additional sources to finance the public health system. To support this strategy, the government has adopted a conscious policy of investing in necessary services such as clinics, labs, biotechnology, technology for telemedicine, and in other

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<sup>18</sup> Cuba is also engaged in exports of medical education services. It provides training and education to foreign students at specialized clinics in the country. According to Wasserman and Cornejo (1999), the foreign exchange earnings from exports of medical education services have been substantial. Scholarships are also provided to study at Cuban medical schools against a commitment to return to practice in underserved communities.

information services, including directing part of the foreign investment in the country toward the health sector. The telecommunications sector has received most of the foreign investment in the country and this has facilitated the establishment of telemedicine links between all hospitals and the provision of advanced services such as diagnostics, surgery, second opinions, and epidemiology, to the remote areas of the country. Cuba is one of the most advanced countries in the use of modern technology within the region.

Cuba's export strategy has also exploited the linkages between health and other sectors such as education and tourism and used exports of health services to promote value added in related areas. Thus, the Cuban case shows that health services exports can provide the basis for improving overall capacity in the health-care system and the utilization of its resources. The key is to have policies that go beyond pecuniary gains and that leverage health services exports for wider spin-off development benefits in health and in other areas. The Cuban case also shows that a successful export promotion strategy in health services is compatible with active state involvement and the preservation of a predominantly public health sector. It requires an integrated perspective that coordinates measures across several sectors and ministries.

### **16.4.2 Maghreb Region**

The experience of two health services exporting nations—Tunisia and Morocco in the Maghreb region—similarly provide evidence on the potential gains that can accrue from such trade for developing countries. Tunisia's health tourism sector attracts around 150,000 international tourists per year and has emerged as the second most popular destination in Africa for medical value travelers. It is known for specializations such as thalassotherapy treatment, cosmetic surgery, prosthetics, dental treatment, and skin treatment procedures that use mineral elements in its Mediterranean shores for therapeutic purposes. The Tunisian government has been trying to leverage its geographic proximity to Europe and North Africa and become a regional medical hub. It has a technical cooperation agency to promote health services trade and has entered into bilateral technical cooperation arrangements with other countries regarding the transfer of foreign patients to Tunisia.

The export promotion strategy mainly consists of investment-related fiscal incentives in the form of tax exoneration on medical equipment and devices, exemption of value-added tax on medical treatment for all foreign patients, a 50% tax break on all investments

related to medical institutions and infrastructure, strategic partnerships with overseas hospitals and steps to attract private investment by setting up medical cities and special investment zones for companies that have medical expertise. As a result, Tunisia has received foreign investment worth \$40 million from Japan's Tokusukai Medical Corporation to set up its first private hospital, which will employ some 1,200 Tunisian medical personnel. A \$50 billion Tunisia Economic City megaproject is under construction, which will provide space to hospitals, clinics, research institutions, and other health and wellness facilities.<sup>19</sup> This export promotion strategy is helping to increase Tunisia's capacity in health-care delivery to not only foreign but also domestic patients. It is also ensuring that more resources are mobilized by the health sector through foreign investments, with spin-off benefits in other areas such as tourism, employment creation, and research and development.

Similarly, a case study of Morocco finds that mode 2 exports have actually increased the supply of health services for both foreigners and locals. The opening of residences for retirees (that provide medical services) has helped change the local attitude toward elders. There is greater urgency to conform to international standards to export with local demonstration effects. Further, doctors, nurses, and other health-care personnel have been offered greater opportunities at home, thus reducing their need to migrate to other countries. As with Tunisia, an important source of gains in Morocco has been investment in health-care facilities and related improvements in capacity and associated employment and revenue gains. For example, Tasweek Real Estate Development and Marketing has begun construction of a \$40 million, 21,000-square-meter health-care complex in Marrakech Healthcare City. This facility targets foreign retirees and medical tourists and has the capacity to serve 5,000 patients a year, performing 85 procedures a day, offering a variety of specialized medical procedures including surgery, cardiology, and radiology.<sup>20</sup> The Portuguese group Malo Clinic is expected to open a €24.1 million clinic and surgery near Casablanca, mainly targeting older retired Europeans, employing

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<sup>19</sup> Investment Climate Update: Medical Tourism. 2014. Africa's Medical Tourism Industry. [https://www.uschamber.com/sites/default/files/021508\\_AfricaNewsletter\\_MedicalTourism\\_FIN.pdf](https://www.uschamber.com/sites/default/files/021508_AfricaNewsletter_MedicalTourism_FIN.pdf) (accessed 14 February 2017).

<sup>20</sup> Investment Climate Update: Medical Tourism. 2014. Africa's Medical Tourism Industry. [https://www.uschamber.com/sites/default/files/021508\\_AfricaNewsletter\\_MedicalTourism\\_FIN.pdf](https://www.uschamber.com/sites/default/files/021508_AfricaNewsletter_MedicalTourism_FIN.pdf) and Oxford Business Group. Just what the doctor ordered: Medical tourism is providing a fillip for sector expansion. <http://www.oxfordbusinessgroup.com/analysis/just-what-doctor-ordered-medical-tourism-providing-fillip-sector-expansion> (accessed 29 September 2015).



around 40 specialists, along with hotel and spa facilities. The clinic would specialize in laser eye, dental, and cosmetic surgery.<sup>21</sup>

However, in both these countries, there are concerns regarding the potential adverse effects of promoting mode 2 exports, in terms of aggravating the existing shortage of qualified doctors and nurses in the country, diverting investment toward the needs of foreign patients and rich domestic patients and away from development of basic health-care infrastructure, and increasing the costs of medical care for domestic patients. Concern has also been voiced regarding the extent to which these facilities will be accessible to the local population and whether and to what extent spillovers will arise for domestic patients. Clearly, both these examples indicate the need for a proactive government policy to ensure that such concerns are addressed and that health services exports benefit the local population and the wider health-care system more equitably.

### 16.4.3 Thailand

Thailand has earned a reputation as one of the leading exporters of medical tourism services, including a large wellness tourism segment. Millions of people come to Bangkok for medical care and undergo procedures such as face-lifts and heart bypass surgeries. Thailand's hospitals provide excellent medical care and superior hospitality. Service quality is promoted by an accreditation system promoted by a government agency named the Institute of Hospital Quality Improvement and Accreditation. Studies indicate mixed consequences of health services exports with regard to objectives of universal access, quality, and equity.

The gains highlighted by studies on Thailand's experience with health services exports include revenues from such exports and from the value added generated by activities of patients and companions traveling with them before and after the treatment. In 2008, it is estimated that medical tourism generated around B46 billion to B52 billion in revenues from the provision of medical services and another B12 billion–B13 billion from related tourism activities, amounting to a total contribution of 0.4% of GDP. Based on various scenarios and assumptions, these studies estimate a value added of B59 million to B110 billion from medical

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<sup>21</sup> International Medical Travel Journal. 2011. Opportunities for Moroccan Medical Tourism. <http://www.imtj.com/news/opportunities-moroccan-medical-tourism/> (accessed 29 September 2015).

tourism (NaRanong and NaRanong 2011).<sup>22</sup> (It is worth noting, however, that if one accounts for the costs of imported inputs such as drugs and equipment to provide such services, the net value added is likely to be much smaller). Another study finds improvements in management practices, increased focus on service delivery and quality, standards, information systems, maintenance of records, emergency preparedness, and support services as a result of medical tourism exports.

One study points to numerous likely adverse effects of medical tourism in Thailand, although it is difficult to make a direct link to medical tourism. One of these effects is the increased demand for health-care personnel, especially specialists by foreign tourists and thus the availability of services for the local population. It is estimated that the health-care system has to provide services to some 420,000 to 500,000 medical tourists annually with the existing health-care staff, thereby aggravating existing human resources shortages and leading to crowding out of domestic patients. The study notes that doctors in Thailand have become too busy with foreigners thus neglecting Thai patients. Evidence from two hospitals found that the time spent by a physician on medical tourists exceeded that for domestic patients. A full-time physician would be able to see only 14 to 16 foreign patients per day on average compared with 40 to 48 (an average of 10 to 12 minutes per patient) domestic patients. These studies also note that foreign medical tourists tend to receive more intensive and costly treatments and thus cause a skew in resources invested by health-care providers (NaRanong and NaRanong 2011).

Another adverse effect found in some studies relates to costs. Private hospitals operating in Bangkok were found to be maximizing their profits, focusing on the well-paying foreign segment and ignoring the lower- to middle-income domestic segment. There has been an increase in the fees for self-paying Thais and the fees charged by private hospitals catering to foreign patients tend to be higher than those catering to local patients. According to 2003–2008 data on total charges per patient, for five representative medical procedures, there was a substantial increase of 10%–25% per year in the charges by most hospitals, accompanied by complaints from middle-income Thais regarding rising health-care costs in high-end hospitals, making them more dependent on the universal health-care coverage scheme (NaRanong and NaRanong 2011).

Media sources also report that Thailand's policy of promoting itself as a destination for international patients is having harmful effects on its public health-care system. Hospitals for medical tourists have lured

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<sup>22</sup> See also Janjaroen and Supakankunti (2000) for an earlier study on Thailand's medical tourism.

many highly skilled physicians and specialists out of public and teaching hospitals as Thai doctors can greatly increase their salaries by taking positions in private hospitals catering to international patients. Some media sources also note that medical tourism has aggravated the rural-urban gap by pulling physicians and nurses from rural hospitals and clinics and concentrating them in Thailand's cities. According to one study, an additional 100,000 foreign patients seeking medical treatment in the country could lead to an internal brain drain of 240–700 doctors, and most Thais are likely to receive health-care services of lesser quality (reduced access and shorter visiting times) (Arunanondchai and Fink 2007: 20).

In response to such findings, several steps have been recommended to mitigate the aforementioned adverse effects. While one extreme view has been to stop promoting Thailand as a destination for medical tourism and to focus instead on promoting better access to health care for its local people, a more balanced view has been to focus on increasing the capacity of the health sector, especially the availability of physicians, dentists, and nurses. Measures proposed include allowing certified foreign physicians to provide medical services at least to foreign patients without having to take a medical certification exam in the Thai language, increasing medical staff training in public universities to full capacity, and collaborating with private hospitals in training more specialists. There are also proposals to spread the benefits of medical tourism to Thai citizens, such as by levying a tax on medical tourists and using the revenue to support medical training.

Some policies have already been adopted to mitigate the redistributive effects of mode 2, such as introducing 3 years of compulsory public service for medical graduates, providing financial incentives for rural doctors, longer-term human resources planning to increase the supply of medical graduates, and steps to maintain the quality of services provided by public schemes by increasing the salary of physicians, nurses, and dentists in all community hospitals.<sup>23</sup> The budget for public health services, especially to cover compensation, has increased by more than what would have been the case in the absence of medical tourism. Overall, Thailand's experience with medical tourism exports confirms that the impact of health services trade is contingent on the local conditions, in particular the existing human resources conditions, the overall capacity of the health-care system, and the presence of measures that proactively distribute the gains from health services trade.

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<sup>23</sup> In 2008, the Ministry of Public Health changed its compensation scheme.

### 16.4.4 Indonesia

Indonesia presents the case of a developing country that is primarily an importer of health-care services under modes 2, 3, and 4.<sup>24</sup> Under mode 2, affluent Indonesians go abroad to Singapore, Australia, Japan, Germany, and the US for treatment. In mode 3, Indonesia has been a recipient of FDI in hospitals and clinics since the 1990s, subject to recommendation by the Ministry of Health and meeting certain conditions. Foreigners can build whole new hospitals or jointly operate existing local hospitals with local investors. The ministry issues licenses upon authorization to the hospital, which is to be operated in accordance with Indonesian standards. There is a requirement to accommodate more than 200 beds. The main investors in Indonesia's hospital services sector are Australia and Singapore. Foreign investment in health services is mainly limited to cities such as Jakarta, Surabaya, and Bali. There are foreign owned or managed hospitals in Jakarta. To ensure that foreign commercial presence yields benefits to the poorer sections, the government has a policy of reserving 10% of hospital beds for the poor for in-patient services, regardless of ownership status, although utilization rates for these reserved beds have been low in most commercial hospitals (Widiatmoko and Ganni 1999). Under mode 4, as Indonesia has a shortage of high-quality doctors, nursing specialists, and resources for management and administration of hospitals, foreign providers are recruited to meet such needs. These include foreign hospital managers who are hired to administer operations and medical and allied health specialists whose role is limited to that of consultants as they are not permitted to provide any direct medical services.

There are no studies to evaluate the costs and benefits of Indonesia's imports of health services. But there are likely to be beneficial effects on capacity and quality of services. There are of course distributional effects, as the FDI hospitals cater to the urban population, mode 2 imports are available only to the affluent and the increased capacity from mode 4 imports is likely to accrue only to urban hospitals catering to the higher-paying segments. However, a point to note is that such gaps in health-care provision and dualism are present even in the absence of health services imports. Further, one would need to weigh these distributional effects against the counterfactual in terms of the quality and availability of health services that would prevail in the absence of health services imports. Hence, the key to benefiting from health services imports is the presence of proactive measures to ensure the gains are distributed

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<sup>24</sup> Much of the discussion on Indonesia is based on Chanda (2001b).

to more segments of the population, such as by providing beds for the poor in foreign investor hospitals and ensuring that these provisions are implemented by the private sector and utilized by the local people. Similarly, increased capacity from recruitment of foreign health personnel may skew human resources more toward the richer segments, but policies that aim to strengthen overall human resources capacity in the health-care system, which create opportunities for pooling of resources and sharing of knowledge and expertise between private and public establishments can help mitigate this skew by ensuring other positive externalities. Thus, how governments choose to condition health services trade with requirements on providers and investment in capacity plays an important role in determining the implications of health services trade for the SDGs.

### **16.4.5 India**

India is one of the most prominent developing countries engaged in exporting health services. It exports health services primarily through movement of health service providers to both developed and developing countries (Chanda 2001b). India's doctors, nurses, and technicians go to the Middle East, the US, Canada, the United Kingdom, and Australia on short-term contracts for training, and as economic migrants. India has bilateral agreements with six Middle Eastern countries and some others for providing private and government doctors on short-term assignments. Such short-term exchange is aimed at alleviating the shortage of health professionals in these countries while also providing opportunities for greater exposure and skill upgrading for India's medical professionals and foreign exchange earnings for the country. India also exports health services through consumption abroad given the low costs and high quality of treatment provided at specialty corporate hospitals that are of international standards. Patients come for treatment from developed countries such as the United Kingdom and the US as well as developing countries such as Bangladesh, Nepal, Sri Lanka, and countries in the Middle East for surgery and for specialized services in areas as wide ranging as neurology, cardiology, endocrinology, nephrology, and urology. India's main advantage in this mode lies in the availability of highly qualified doctors, nurses, paramedics, and hospital professionals and its ability to provide high-quality but affordable treatment relative to that available in developed countries. India is also known for exporting traditional and alternative therapeutic services. India also exports telemedicine services in diagnostics, radiology, and pathology to patients in neighboring countries and to establishments in Central Asia. Under mode 3, India

is engaged in both imports and exports of health services. FDI is open up to 100% in hospitals and there are cases of foreign companies that have set up state of the art hospitals in leading cities. Nonresident Indians have set up high-tech hospitals with 100% ownership (Chanda 2007). There are also several super-specialty corporate hospitals built in collaboration between Indian and foreign companies. Some Indian hospitals have also expanded their presence overseas through investment and collaboration with foreign partners.

There has been some qualitative analysis of the costs and benefits associated with India's trade flows in health services (Chanda 2001a, 2001b, 2007, 2010, 2013; Martinez et al. 2011). For instance, it has been cited by some researchers that the emergence of modern corporate and investor-owned hospitals in the country under mode 3 imports is helping to attract India's health-care professionals working abroad, thus stemming brain drain in this sector. Indian doctors working overseas are taking pay cuts to work in India. These professionals are being lured back by the emergence of world-class facilities due to increased capital flowing into health care, the chance to be part of a new delivery system, and the opportunity to give back to their country. In addition to facilitating consumption abroad and improvements in the country's health infrastructure, commercial presence in health services has also created other avenues for exports of health services. Some corporate hospitals have diversified their activities to areas such as medical studies, clinical trials, and research and generate additional resources through fees for such services. Inward commercial presence is also enabling investment in telemedicine facilities with potential benefits to the local population.

At the same time, there have been concerns about the equity implications of India's trade in health services. Most of its mode 4 exports are not really short term in nature and constitute brain drain to other countries, thus worsening the existing shortage of doctors, nurses, and paramedics in the country.<sup>25</sup> Moreover, as many of the emigrating personnel have received training that is subsidized by India's government at public sector medical and nursing colleges, this brain drain constitutes a loss of public investment in human capital. In the context of mode 2 exports, there is a perception that the benefits have been limited to foreign patients and to affluent urban patients, thus aggravating the existing dual market structure between the private and public health-care system in India, possibly further encouraging

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<sup>25</sup> Although there are an estimated 500,000 nurses in the country, there is still a shortage of nurses due to the large numbers who emigrate to the Middle East and other countries.

internal brain drain of the most qualified professionals from the public health-care system to the private corporate hospitals, given the better remuneration and working conditions in the latter. In a country where only 10% of all doctors are in the government sector and the private sector accounts for more than 60% of all hospitals and dispensaries, such internal brain drain from the public sector has major negative implications for equity and access to quality health services by the poor (WHO 1999). There has also been criticism that the government has often provided land at subsidized rates for corporate hospitals that are leading exporters under mode 2 in prime locations of various cities but that their facilities have not been available to the middle- and lower-income segments given their high costs. Even though the government has imposed conditions in some cases to reserve a certain number of beds for poor and low-income patients and to provide treatment to these groups at subsidized rates, evidence indicates that often such beds lie vacant or are used by upper- and middle-income people on the basis of connections (Chanda 2001b).

In general, there has been criticism of India's government for extending incentives and support for the promotion of medical tourism by subsidizing the rich coming from developed countries, for not ensuring that the benefits are spread to the lower-income segments of the local population and that the requirement to serve poor patients has not been enforced properly. There has also been criticism regarding ethical violations, as in the case of surrogacy tourism by couples from foreign countries who cannot afford expensive infertility treatment at home or transplant tourism and environmental implications due to disposal of medical waste resulting from such exports. Some researchers have also noted that there is no evidence that the earnings generated from health services exports have been invested in a manner that meets larger developmental and equity objectives or for improving the public health-care system or that the upgraded infrastructure and facilities have helped in promoting research and development and cutting edge procedures that serve national interests. Thus, as in the case of other countries, trade in health services can be beneficial for realizing sustainable development objectives but not unconditionally. Much hinges on how the government prioritizes objectives of equity, quality, and linkages with the wider health system.

## 16.5 Policy Takeaways

The main insight that emerges from the preceding discussion is that trade in health services can help countries in meeting certain SDGs

such as improved access to health care and improved health outcomes. However, the state of the health-care system, the regulatory environment, what kinds of strategies are adopted by the government, and the extent to which there are positive externalities determines whether these gains are realized or not. The important point to note, however, is that some of the negative equity consequences and concerns highlighted above often exist even in the absence of health services trade. This is because many of these potential negative effects are a result of internal factors and not trade per se. Where the existing health-care system is already dualistic in nature due to insufficient funding of public health care, inefficiencies, and poor human resources management systems and inadequacies in the regulatory framework, such imbalances are likely to exist in the availability and quality of health services even without health services trade.<sup>26</sup>

The question then is to what extent such trade may aggravate these negative effects and to what extent governments proactively ensure that the SDGs are achieved through their policies on pricing, subsidies, insurance coverage, training of health sector resources, accreditation, investment in health infrastructure, utilization of foreign exchange earnings, regional and bilateral cooperation strategies, public-private partnerships, and other arrangements, among others. The experience of countries highlighted here indicate that if safeguards are in place to ensure access for low-income segments, then trade can augment resources for investment and can alleviate the pressure on the health sector by expanding facilities for all.

There are two broad directions for policy action at the national level, if trade in health services is to facilitate the realization of the SDGs and mitigate the negative effects on development. The first is to address structural issues in the health-care system, the key structural issues being standards, infrastructure, human resources, and technology. For instance, investment in human resources and human resources management systems can help address the issue of brain drain, which is a potential negative consequence of mode 4 trade in health services. Similarly, increasing expenditures on health services and allocating these expenditures more efficiently and in line with local needs, demand conditions, and priorities can help address adverse consequences such as cream skimming, dualism, and crowding out of local patients that may arise from trade. This may involve expanding the supply of public hospitals, clinics, beds, and improving efficiency in the public sector or incentivizing the private sector for the same, which may in turn require

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<sup>26</sup> See Chanda (2001a, 2001b, 2002) for a discussion of these issues.



measures to subsidize the cost of establishments, financial incentives, and channeling of taxes from such providers for investment in the public health system.

The second area for policy action is to ensure synergies between health services trade and the rest of the health-care system. To ensure synergies, governments can facilitate tie-ups between trading and non-trading health-care establishments, public-private partnerships through the pooling and exchange of skills and technologies and cooperation in training, cross-subsidization of poor patients in hospitals engaged in health services trade, and the adoption of more inclusive business models in trading establishments. The country experiences show that public sector involvement can be important in promoting health services exports and in shaping the benefits. Countries also need to integrate trade in health services with other sectors of the economy such as services including travel and tourism, insurance, education, and telecommunication services.

In addition to national policies, there is also a role for multilateral and regional cooperation to promote sustainable development in the context of health services trade. GATS covers health services under two sectors—professional services, where health personnel such as doctors, nurses, and caregivers are covered; and the Health and Social Services sector, where facilities such as hospitals, clinics, and diagnostic establishments are covered. Although health services have hardly received commitments from WTO member countries under both these categories and GATS excludes services “provided in the exercise of governmental authority”—a carve-out clause that is pertinent to health services—GATS can have a bearing on quality and access to health services across countries.<sup>27</sup> More liberal commitments in the various modes can facilitate such trade and help low-income countries to improve their health systems through increased commercial presence, telemedicine, medical tourism imports, and personnel inflows. At the same time, the GATS commitment structure also allows countries to inscribe conditions pertaining to appropriateness of technology, quality certification, reservation of public subsidies for domestic providers, etc., i.e., measures that ensure standards of care, protection of consumers, and equitable outcomes. Discussions on Domestic Regulation and Recognition under the aegis of GATS can also facilitate the adoption of international standards and best practices, promote cooperation on mobility of health personnel, and improve access and quality of health services among member countries.

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<sup>27</sup> See WTO (1994) for GATS provisions.

Multilateral cooperation can be particularly important in addressing the issue of brain drain. Countries could negotiate short-term bilateral arrangements to facilitate cross-border movement of health workers in line with host and home country supply and demand conditions. This would yield benefits associated with increased exposure and upgrading of skills for health professionals and foreign exchange earnings while overcoming the problem of permanent outflows. This cooperation could also involve compensation of sending countries by host countries through assistance agreements or ensuring that the latter's health professionals return after serving a fixed period. Cooperation on immigration and labor market policies, such as under special visa schemes and recruitment programs for overseas health professionals can also be pursued to regulate the movement of health professionals. Bilateral cooperation is also required to promote links between emigrating professionals and skilled nationals to reduce the negative effects of brain drain in the sending countries and to promote associated knowledge and skill transfer. Bilateral and regional integration agreements that cover labor mobility or sector-specific labor agreements can ensure such benefits accrue from mode 4-based trade in health services without the attendant problem of brain drain. Agreements among countries regarding ethical recruitment practices can also help in mitigating the adverse effects of mode 4 in health services (WHO 2004; Buchan and Delanyo 2004; Stilwell et al. 2003, 2004; Commonwealth Secretariat 2003).

As regional markets are important for trade in health services, regional cooperation across all modes can also facilitate the realization of the SDGs while addressing adverse effects. Regional and subregional efforts concerning portability of insurance; tie-ups between health providers across countries in a region through joint investments, cross-referrals, and sharing of expertise; development of cross-border payment systems; mobility of personnel; and harmonization of standards can help augment capacity in the poorer countries and remote areas within a region. Regional cooperation among neighboring countries to serve patients in border areas that are subject to resource and quality constraints can also be mutually beneficial.

In sum, trade in health services can be strategically used to address several SDGs, although it may pose potential challenges for equity and sustainability. As the preceding discussion highlights, countries need to adopt a proactive approach to provide a supportive regulatory and infrastructural environment so that the many potential gains associated with health services trade can be facilitated and enhanced while the associated negative effects can be minimized or prevented.

Such steps must be taken at the national, regional, and multilateral levels and must involve a wide range of stakeholders, such as national governments, international organizations, professional bodies, and the health industry. Trade should therefore not be viewed in a narrow way as a form of commercialization of health services, but rather as a means to make health services more accessible, affordable, and of better quality.

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PART IV

**Other Linkages  
between Trade  
and the SDGs**

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# 17

## Trade and Urbanization

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### 17.1 Introduction

Modern humans have been increasingly concentrated in cities. The United Nations forecasts that 60% of the world's population will live in urban areas by 2030. Since 2007, when the world's urban population exceeded its rural counterpart for the first time, the development community has shifted some of its focus to urban areas. Urbanization was a central theme of the World Bank's *World Development Report 2009*. Regional multilateral institutions such as the Development Bank of Latin America and the Asian Development Bank have also stepped up their efforts to support the urban sector, and have begun to collaborate on comparative studies of urbanization.

Urbanization is a broad term that includes a wide range of issues such as spatial distribution of cities, architectural design, labor migration, and size distribution of cities. In urban economics, urban development has a threefold meaning: population urbanization, urban primacy, and urban concentration (Moomaw and Shatter 1996). In the empirical literature, urban primacy is usually measured by the share of the largest city's population in a country's total urban population; urban concentration is usually measured by the population share of big cities (generally being defined as those with a population of more than 1 million) in total urban population; and population urbanization is measured by the share of urban population in total population.

For developing economies, population urbanization is often the starting point of discussion or research on urban development. However, it is believed that population urbanization in developing countries does not differ fundamentally from the experience of developed countries (Moomaw and Shatter 1996). Henderson (2005) states that urbanization is a transient phenomenon, implying that attention should be focused on urban primacy and urban concentration. These arguments or statements are only applicable to the urbanized countries or regions, not developing economies where the level of population urbanization has

**Table 17.1 Population Statistics (1960–2011) (million)**

	1960	1970	1980	1990	2000	2010	2011
<b>World</b>							
Total population	3,040	3,690	4,450	5,300	6,120	6,890	6,970
Population in cities	1,010	1,340	1,740	2,260	2,840	3,540	3,610
Population in metropolises	395.32	530.11	684.10	862.03	1,107.02	1,379.65	1,410.84
<b>Developing countries</b>							
Total population	2,297	2,857	3,538	4,321	5,070	5,760	5,830
Population in cities	543	777	1,098	1,550	2,054	2,654	2,715
Population in metropolises	213.97	305.23	429.38	577.61	791.86	1,028.47	1,055.69

Note: A metropolis is a city with a population of more than 1 million.

Data source: World Bank. World Development Indicators.

risen rapidly and will continue to rise in the decades to come. As shown in Table 17.1, from 1960 to 2011, the population in the world rose from 3.04 billion to 6.97 billion, an increase of 129.28%, while the total urban population increased 257.43% from 1.01 billion to 3.61 billion, and the total population of cities with over 1 million residents increased 257.22% from 395 million to 1.41 billion. These figures show that the growth rate of urban population in the world (especially the population in larger cities) is much faster than the growth rate of the world's total population in the past half-century.

Against the rising importance of population urbanization, little has been published on the determinants of population urbanization in developing economies. One of the determinants is openness, particularly for Asia, where many economies adopt export-oriented policies and international trade plays an increasingly important role. Recognizing the shortage of research on the linkages between international trade and urban development in developing countries, this chapter will examine the effects of international trade on urban development, especially focusing on the interlinkages between international trade and population urbanization.

Our contribution is related to the United Nations' Sustainable Development Goals (SDGs). Goal 11 of the SDGs is to make cities inclusive, safe, resilient, and sustainable. However, urbanization can be accompanied by unemployment and poverty, malnutrition, ghetto

houses, and so on. For example, if the speed of population urbanization is too fast, but the agrarian sector cannot provide enough food to feed the population, malnutrition would appear. If a developing country does not adopt efficient trade policies, even if it has enough food to feed the urban population, rapid population urbanization may result in a high urban unemployment rate, or other problems of over-urbanization. One may ask whether international trade encourages urbanization and consequently enhances inclusiveness or unsustainability. In this chapter, we will show that international trade, cereals or non-cereals trade, and population urbanization spur economic development with structural transformation. This indicates that the governments of developing economies should allocate more resources to providing roads, transportation, housing, and basic services to the urban population.

## 17.2 Literature Review

In this section, we will first review the literature on the relationship between international trade and urban concentration and urban primacy, and then summarize studies on the role of international trade in the process of population urbanization.

### 17.2.1 International Trade, Urban Concentration, and Urban Primacy

Early research on the determinants of urban concentration comes from Williamson (1965). He argues that urban concentration will initially increase and then decline with economic growth. This is confirmed by some studies (Wheaton and Shishido 1981; Rosen and Resnick 1980). More recently, Ades and Glaeser (1995) show that total population and the share of the nonagricultural labor force are positively correlated with urban concentration. They also explain that government policies and politics play an important role in the process of urban concentration, i.e., government may adopt biased policies to favor residents in the country's largest city because this can help governments survive. As a result, dictatorship and political instability encourage urban concentration. Davis and Henderson (2003) find that investments in interregional infrastructure and strengthened fiscal decentralization can reduce urban concentration.

Another stream of literature focuses on the interlinkages between trade openness and urban concentration, including the neoclassical urban systems theory and new economic geography (NEG) theory.

Henderson (1982) develops the framework of neoclassical urban systems under the neoclassical assumptions. He constructs a general equilibrium model to explain the formation of urban systems in a small open economy. Relying on this model, Rauch (1989) derives that trade liberalization could encourage urban concentration. As Henderson (1996) points out, trade changes the output structure of an economy, causing changes in the number of different types of cities, which affects urban concentration. Monfort and van Ypersele (2003) argue that international trade leads to urban concentration. However, Henderson (1996) indicates that the impact of trade liberalization on urban concentration depends on country-specific geographic characteristics, for example, the spatial heterogeneity between coastal cities and inland cities. Based on a multisector Ricardo trade model, Rauch (1991) shows that when the cost of domestic trade does not change, trade liberalization promotes the growth of coastal or border cities. Without considering other geographic characteristics, the size of cities monotonically decreases when moving from coastal or border areas to inland areas, because trade liberalization facilitates labor migration from inland cities to coastal or border cities that have better accessibility to foreign markets. Likewise, Brühlhart, Crozet, and Koenig (2004) show that external liberalization leads to urban agglomeration of the border areas.

Krugman (1991) pioneered the NEG theory where transportation cost, as a dispersion force, plays an important role in determining a firm's incentive to concentrate into some area with other firms. As regional integration and trade liberalization can help reduce transaction costs, they encourage agglomeration of economic activities. Following Krugman (1991), Monfort and Nicolini (2000) construct a two-country, four-region model where populations can migrate freely inside a country, but cannot cross the border. They find that regional integration inside a country and international trade encourage agglomeration. Haaparanta (1988) sets up a standard NEG model, taking inequality of factor endowments into account, and finds that trade liberalization causes spatial production agglomeration to regions with comparative advantages. If some industries exogenously depend on some special regions, specialization of those industries with comparative advantages would encourage the agglomeration in these regions. Similarly, Paluzie (2001) believes that trade would encourage agglomeration.

However, other NEG models show the opposite conclusion (e.g., Krugman 1996; Krugman and Elizondo 1996; Moncarz 2004; Behrens et al. 2007). Krugman and Elizondo (1996) explain that a closed economy tends to promote large metropolises with huge and relatively

affluent population concentration, which offer the best market access (backward linkages) to manufacturing firms that serve the domestic market. Meanwhile, huge cities can offer better access to inputs including labor and intermediate inputs from other firms (forward linkages). For these economies, implementing import-substitution and trade liberalization policies will promote the relocation of firms that serve foreign markets to areas with better access to foreign consumers and intermediate products from abroad, decreasing concentration in metropolises. Behrens et al. (2007) draw a similar conclusion by developing a monopolistic competition model and assume two centrifugal forces, one from the inability of farmers to migrate freely and the other from a competition effect in regions with a high concentration of firms.

The different conclusions can be attributed to different assumptions that are made regarding how decreasing trade costs affect centrifugal forces (Behrens et al. 2007; Crozet and Koenig 2004). They can also be attributed to a country's industrialization level relative to that of the rest of the world. For example, Alonso-Villar (2001) argues that for those developing countries with low levels of industrialization, firms might choose locations closer to domestic markets to avoid fierce international competition, leading to urban concentration.

Empirical studies on the relationship between international trade and concentration do not arrive at same conclusions. The traditional view maintains that only those large cities that serve as hubs and are of concern to foreign trade partners can benefit from trade openness, and consequently trade openness increases the concentration or primacy of these cities (Linsky 1965; Berry 1961). However, others find that international trade reduces urban concentration (Frankel and Romer 1999; Karayalçın and Yilmazkuday 2014). Moomaw and Shatter (1996) show that higher export orientation significantly reduces urban concentration and urban primacy. Yet, some other studies find that the effect of trade on urban concentration is insignificant (Ades and Glaeser 1995; Nitsch 2006; Junius 1999).

Finally, the impact of international trade on urban concentration may also depend on different geographic features or the components of trade. For example, De Ferranti et al. (1998) assert that international trade may reduce urban concentration in Colombia because specialization in agricultural exports might reduce spatial disparities through an increase in farmers' income in particular regions. Henderson (2000) finds that trade increases urban concentration in port cities, but decreases urban concentration if the primate city is not a harbor city. Using panel data from Colombia, Guevara (2015) assesses the effect of regional trade

openness on agglomeration within regions and finds that the effect of trade on urban concentration varies across regions. On the one hand, trade has positive effect on spatial agglomeration within regions with large home market and location advantages. On the other hand, trade has negative effect on agglomeration within regions that lack access to international trade or historical advantage. Gaviria and Stein (2000) find that trade liberalization hinders the growth of major cities in inland areas, but it has little effect on the population growth of port cities or cities located near ports. After controlling the endogeneity in regression models, Grajeda and Sheldon (2015) find that trade liberalization reduces the size of the primate city, but helps increase the size of non-primate cities.

Based on the above literature review, it appears difficult to derive a general conclusion about the nexus between international trade and urban concentration. What can be stated is that if a highly industrializing economy adopts export-oriented strategies, and the world market is big enough, trade liberalization will encourage the concentration of harbor cities or border cities because they provide better access to the world market.

### **17.2.2 Effect of International Trade on Population Urbanization**

The literature on population urbanization can be at least dated back to the dual economy models, which explore the determination of rural–urban migration, urban wages, rural–urban wage gaps, and urban unemployment (Lewis 1954; Ranis and Fei 1961; Harris and Todaro 1970). According to Harris and Todaro (1970), urban unemployment could be a normal phenomenon in developing economies since many migrants are attracted by high expected rather than real income in urban sectors. Some studies find that in many Asian economies, the speed of population urbanization is faster than the speed of industrialization, resulting in over-urbanization (Davis and Golden 1954). Pandey (1977) and Bairoch (1988) attribute over-urbanization in some Asian economies to rural–urban migration pushed by too-fast population growth and the increasing pressure of population on agricultural land.

Other literature empirically tests the determinants of population urbanization. For example, Davis and Golden (1954) and Graves and Sexton (1979) find an S-shaped relationship between gross domestic product (GDP) per capita and population urbanization in preindustrial and developing countries. That is to say, as GDP per capita rises, the rate of population urbanization in the early period increases slowly,

then accelerates before slowing down. Similarly, Moomaw and Shatter (1996) find that population urbanization is positively correlated with GDP per capita and industrialization. Using state-level panel data from India, Pandey (1977) finds that industrialization is positively correlated with population urbanization, while cropping intensity being a proxy for agricultural development is negatively correlated with it. Brueckner (1990) finds that the rural–urban income ratio, the ratio of commuting costs to urban income, and the ratio of agricultural land rent to urban income have significant effect on city size in developing economies. Davis and Henderson (2003) show that government policies, such as price controls and industrial protection, have indirect effect on population urbanization through affecting industrial structures.

Very few empirical studies test the effect of international trade on population urbanization in developing economies. Moomaw and Shatter (1996) find that population urbanization rises with increases in export orientation based on cross-country panel data. Jedwab (2013) investigates the effect of crop exports on population urbanization in Ghana and the Ivory Coast, and finds that the rate of population urbanization increases with exports. However, using a panel of Asian countries, Hofmann and Wan (2013) find that international trade (share of import and export to GDP) is not significant in all regression models on population urbanization. The mixed findings could be caused by the use of different components of international trade. Using panel data of developing Asia during 1993–2010, Zhang and Wan (2015) provide evidence that international trade is generally negatively correlated with the level of population urbanization. However, cereals and non-cereals trade have different correlations with population urbanization: the former is positively correlated while the latter is negatively correlated with population urbanization. Similarly, Glaeser (2014) finds that after the 1960s, there has been an explosion of poor megacities in developing countries. He shows that agricultural prosperity can lead to more population urbanization in a closed economy, but that population urbanization increases with agricultural desperation in an open economy. In the latter case, importing agricultural products while exporting nonagricultural products may be a key driver of population urbanization in poor countries.

An important question to be answered is whether the international trade of agricultural products and manufactured goods has different effects on population urbanization. So, the next section will examine the interlinkages between different components of international trade and urban development, especially focusing on the interlinkages between cereals trade and population urbanization.



## 17.3 The Nexus of Trade–Population Urbanization

In this section, a simple framework is first constructed to show that grain imports and exports can affect population urbanization by changing the constraints of domestic grain surplus on urbanization. Evidence from economic history, the People’s Republic of China (PRC), and India is then provided to highlight the theoretical hypotheses of this framework.

### 17.3.1 A Simple Framework on Cereals Trade–Population Urbanization

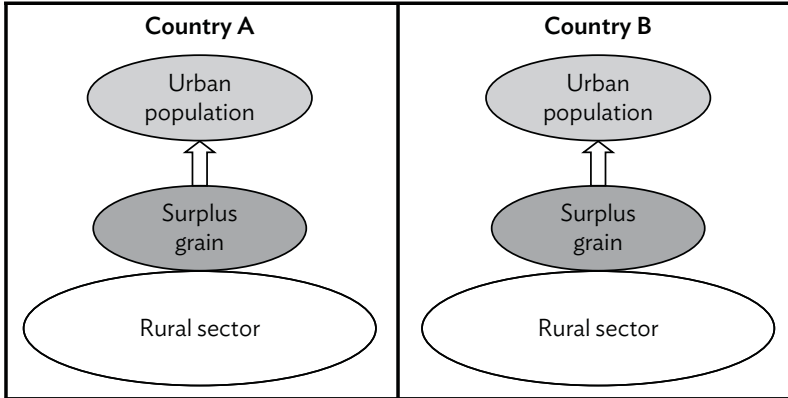
In a closed economy, the share of the population that can live in urban areas is basically determined by the surplus of grain and food produced by peasants because the urban sector can only be fed by the agriculture sector. For example, if each peasant can feed one other person, then the share of urban population in the long run could be 50% only; if each peasant can feed two other persons, then the share of urban population could be as high as 75%. That is to say, the share of surplus grain generally equals population urbanization in the long term. This equilibrium in a closed economy has been realized and discussed by anthropologists, economic historians, and development economists (Skinner 1977; Zhao 1992; Zhang 1992; Johnson 1997, 2000).

Figure 17.1 illustrates such an equilibrium where two closed economies have the same population but the agricultural productivity of country B is higher than that of country A. Thus, country A has lower population urbanization than country B.

We provide historical evidence from the PRC to illustrate such equilibrium. In its early development stage, the PRC, the world’s most populous country, experienced a grain shortage and could not sustain population urbanization. Especially in the “Three Years of Economic Hardship” from 1958 to 1960, the urban population sharply increased while national grain output decreased dramatically (Figure 17.2), leading to tens of millions of deaths due to starvation.

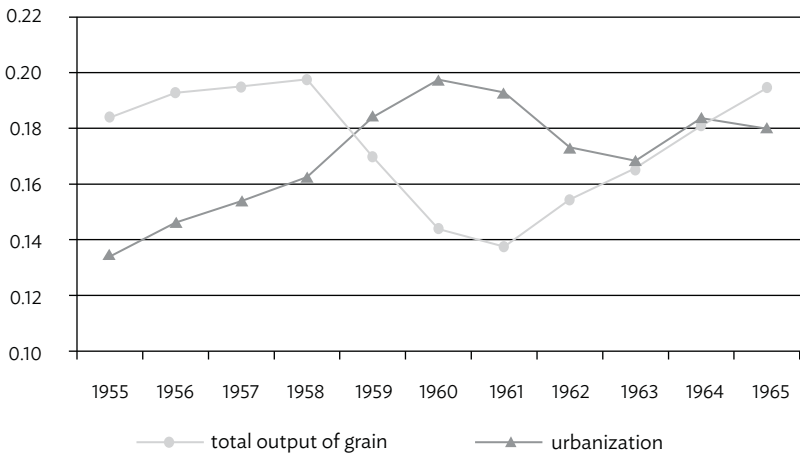
In order to deal with this problem, Nine Measures to Reduce the Urban Population and Urban Food Consumption was issued by the Central Committee Work Conference on 16 June 1961. It required that the urban population be reduced by at least 20 million in the following 3 years. In May 1962, the central government further issued the Decision to Further Cut Down Staffing and Reduce the Urban Population

**Figure 17.1 Equilibrium between Grain Surplus and Urbanization in Closed Economies**



Source: Authors.

**Figure 17.2 Total Grain Output and Urbanization in the People's Republic of China (1955–1965)**



Note: The unit of measurement is trillion tons for total output of grain and % for urbanization.

Source: National Bureau of Statistics of the People's Republic of China, [www.stats.gov.cn](http://www.stats.gov.cn)

(Sun 2013) to ease the tension between urban population growth and food shortage. Shanghai had also encountered food shortage before that period. In response, the Shanghai government encouraged migrant peasants to go back to their hometowns and join agricultural production, and organized urban unemployed workers to go to Jiangxi Province and other rural areas to take part in wasteland reclamation. According to Chen (2011), from 1955 to 1956, more than 5 million urban citizens were dispatched from Shanghai.

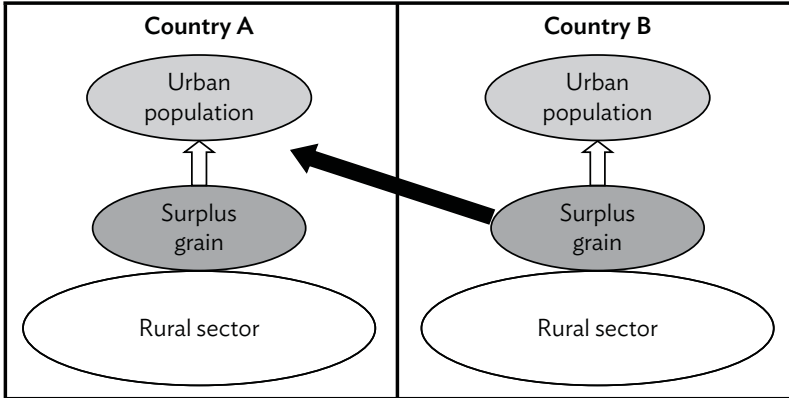
In an open economy, the equilibrium could be changed by international trade. In this case, the share of urban population could be higher or lower than the ratio of surplus grain to total grain output produced by domestic peasants. For example, Glaeser (2014) argues that globalization radically changes the process of urbanization. Trade liberalization means that Port-au-Prince, for example, can be fed with imported American rice. Urban growth can still take place even in the face of rural deprivation, as in Kinshasa today. His model shows population urbanization without improvement of agricultural productivity. He also finds a sharp decline in the connection between local agricultural productivity and urbanization between 1961 and 2010, which is compatible with the hypothesis that global food supply has reduced the need to develop a domestic agricultural surplus before building cities. Here, a new equilibrium is attained when the ratio of surplus grain to total grain output produced domestically plus net import of food equals to the share of urban population. This equilibrium applies not only to cities like Port-au-Prince, but also to economies like the PRC; Hong Kong, China; Japan; Singapore; and those that do not have enough cultivated land or cannot produce enough food to feed their citizens. Another side of the coin is that in countries such as Brazil, Canada, France, and the United States, the ratio of surplus grain to total grain output produced domestically is higher than the share of urban population. Their international trade involves exporting surplus grain to feed other countries' population urbanization.

Figure 17.3 illustrates the new equilibrium in countries A and B, which are now open economies. In this case, although agricultural productivity of country A is lower, it still has a larger urban population than country B. This is because country A can now import grains produced by country B.

A good example is illustrated in Figure 17.4, where between 1000 and 1900 the global share of urban population more than quadrupled, increasing from 2% to over 9%, and the increase occurred mostly during 1800–1900.

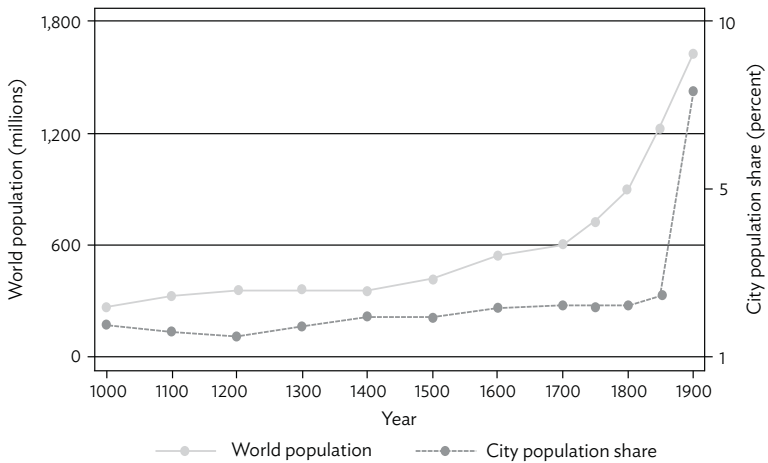
Nunn and Qian (2011) attribute such an increase partly to the introduction of potatoes from South America to Europe. Potatoes

**Figure 17.3 Equilibrium between Grain Surplus and Urbanization in Open Economies**



Source: Author.

**Figure 17.4 Total Population and Urbanization of the World (1000-1900)**



Source: Nunn and Qian (2011).

are native to South America and were widely adopted as a field crop in Europe toward the end of the 17th century and the beginning of the 18th century before spreading to the rest of the Old World (i.e., the entire Eastern Hemisphere), mainly by European sailors and missionaries. Compared with other European staple crops, potatoes provide more calories, vitamins, and nutrients per unit of output. As a result, the introduction of potatoes led to rapid growth of population and cities (Salaman 1949; von Fürer-Haimendorf 1964; Moomaw and Shatter 1996). Using country-level data on population and population urbanization, Nunn and Qian (2011) find in their empirical testing that the introduction of potatoes from the New World to the Old World is responsible for approximately one quarter of the growth in Old World population and urbanization between 1700 and 1900.

What is not shown in Figure 17.3 is that country B can import nonfarm products from country A after exporting food items. These imports and exports entail equilibrium between rural and urban sectors in both countries. Cross-border trade enables country A to increase its population urbanization at the expense of country B's urbanization potential. Meanwhile, nonfarm exports of country A will help sustain its urban sector and contain country B's population urbanization. Based on these arguments, the following two hypotheses can be proposed:

- Hypothesis 1: Cereals and non-cereals trades have different effects on population urbanization.
- Hypothesis 2: Net imports of cereals increase the importer's population urbanization.

In the next section, we will test these two hypotheses using panel data of 1993–2010 from 40 developing countries in Asia.

### 17.3.2 Empirical Evidence

Table 17.2 lists the definition of variables. Here “urbanization” is the independent variable, measured by the share of urban population in total population. Trade openness is measured by the share of imports and exports in GDP. In order to investigate the different effects of different components of trade on population urbanization, shares in GDP of imports and exports, cereals imports and exports, non-cereals imports and exports, cereals imports, cereals exports, and net cereals imports will be controlled in the regression models. GDP per capita, structure of GDP (share of primary industry in GDP, share of secondary industry in GDP), average cereals yield, total population, land area, and time trend are also controlled in the models. The last two in Table 17.2

**Table 17.2 Definition of Variables**

Variable	Definition
urbanization	Share of urban population (%)
trade	Share of imports and exports in GDP (%)
trade_cereals	Share of cereals imports and exports in GDP (%)
trade_other	Share of non-cereals imports and exports in GDP (%)
impt_cereals	Share of cereals imports in GDP (%)
expt_cereals	Share of cereals exports in GDP (%)
netimp_c	Share of net imports of cereals in GDP (%)
avgdp	GDP per capita (\$; log)
avcereals	Average cereals yield (m ton; log)
totpop	Total population (person; log)
surface	Surface area (km; log)
gdp1_share	Share of primary industry in GDP (%)
gdp2_share	Share of secondary industry in GDP (%)
trend	Time trend
neighbor_trade	Average level of openness of neighboring countries (%)
top5cereals	Total cereals output in Brazil, Canada, France, Russian Federation, and the United States (kg; log)

GDP = gross domestic product, kg = kilogram, km = kilometer, m ton = million ton.

Sources: World Bank, World Development Indicators; Food and Agriculture Organization of the United Nations.

are instruments that will be employed in the two-stage least squares estimation.

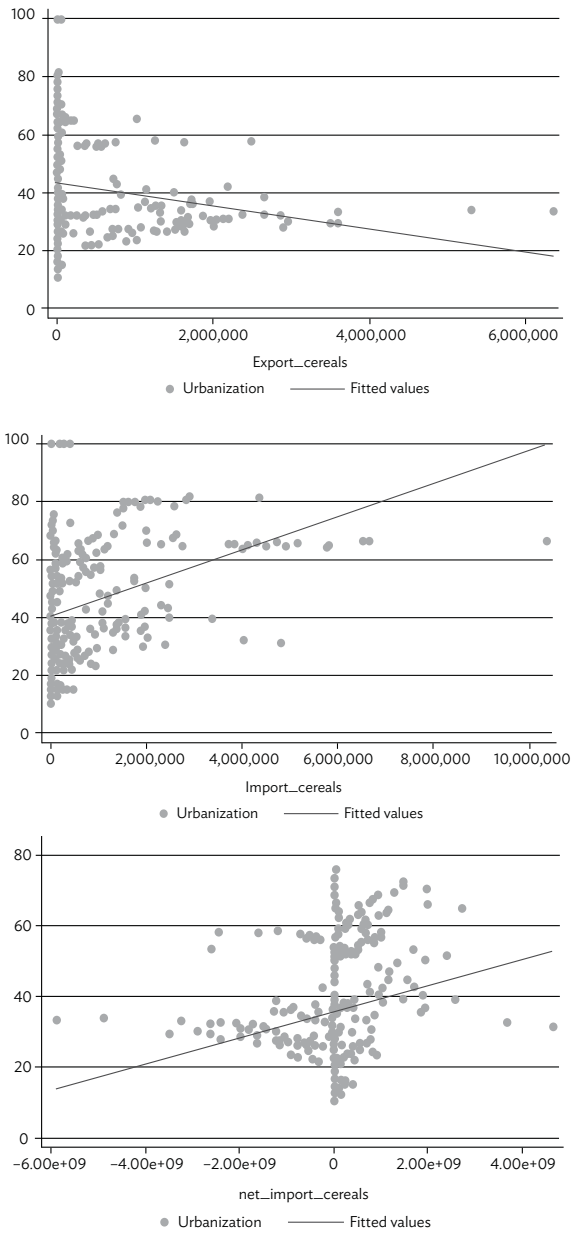
Before running regression models, Figure 17.5 plots import, export, and net import of cereals and population urbanization. It is clear that cereals export is negatively correlated with population urbanization, while import and net import are positively correlated with population urbanization.

Following the literature, the following regression model is specified:

$$\text{Urbanization}_{i,t} = \beta_0 + \beta_1 \text{trade}_{i,t} + \sum \beta_2 X_{i,t} + \beta_3 m_i + \beta_4 n_t + V_{i,t}$$

where subscript  $i$  denotes country,  $t$  denotes year,  $\text{trade}_{i,t}$  denotes international trade and its components,  $m_i$  and  $n_t$  denote fixed effects, and  $X_{i,t}$  denotes control variables. The share of secondary industry in total GDP measures industrialization level.

**Figure 17.5 Cereals Trade and Population Urbanization in Asia**



Note: The unit of measurement is % for urbanization and ton for cereals.  
Sources: World Bank. World Development Indicators; Food and Agriculture Organization of the United Nations.

Regression results of the Ordinary least Squares models are presented in Table 17.3. Consistent with Krugman's theoretical prediction that there is a negative correlation between international trade and urbanization in developing countries, the coefficients of trade openness are significant and negative in four models.

Also, the coefficient of average cereal yield has positive effect on population urbanization, as expected. The coefficients of GDP per capita and total population are positive, indicating their positive correlation with population urbanization. The coefficient of "surface" is negative in all models, which indicates that larger land surface area results in lower population urbanization.

What about the effects of cereals and non-cereals trade on population urbanization? Regression results of the OLS models are reported in

**Table 17.3 Effect of International Trade on Population Urbanization**

	1	2	3	4
Trade	-0.0299*** (0.0079)	-0.0299*** (0.0079)	-0.0286*** (0.0079)	-0.0282*** (0.0080)
Avgdp	0.318 (0.555)	0.318 (0.555)	0.507 (0.570)	0.511 (0.571)
Avccereals	0.291 (0.290)	0.291 (0.290)	0.209 (0.296)	0.216 (0.297)
Totalpop	18.90*** (3.448)	18.90*** (3.448)	18.05*** (3.496)	18.05*** (3.501)
Surface		-33.01*** (6.156)	-31.47*** (6.244)	-31.40*** (6.258)
gdp1_share			0.0442 (0.0314)	0.0427 (0.0319)
gdp2_share				-0.00904 (0.0315)
Trend	0.193** (0.0839)	0.193** (0.0839)	0.223*** (0.0864)	0.224*** (0.0866)
Constant	-701.0*** (114.1)	-281.4 (177.8)	-348.4* (183.8)	-350.9* (184.3)
Country Fixed Effect	YES	YES	YES	YES
Observation	343	343	343	343

Note: The numbers in parentheses are standard errors, where \*, \*\*, and \*\*\* indicate significance levels of 10%, 5%, and 1%, respectively.

Sources: World, Bank World Development Indicators; Food and Agriculture Organization of the United Nations.



Table 17.4, from which three conclusions may be drawn. First, the coefficient of “trade\_cereals” is significant and positive in models 1 and 4, whereas that of “trade\_other” is significant and negative in all models. This is consistent with the first hypothesis. Second, after controlling for the non-cereals trade, the coefficient of “impt\_cereals” is significant and positive in models 2 and 5, which indicates that cereals imports can improve population urbanization, as predicted by the theoretical hypothesis. Third, after controlling for the net import of cereals in models 3 and 6, “netimpt\_c” is significantly positive, which suggests that the higher the net imports of cereals, the higher the population urbanization. This is also consistent with the second theoretical hypothesis.

The regression results in Table 17.4 may suffer from endogeneity for two reasons. First, other things being equal, countries with a higher level of population urbanization may need more food from other countries. Second, trade of cereals may be correlated with the residual term in the regression model. However, it is not easy to find instrument variables for

**Table 17.4 Effect of International Trade Components on Level of Urbanization**

	1	2	3	4	5	6
trade_cereals	0.435** (0.195)			0.464** (0.190)		
trade_other	-0.0307*** (0.0080)	-0.0308*** (0.0081)	-0.0309*** (0.0081)	-0.0317*** (0.0078)	-0.0319*** (0.0079)	-0.0323*** (0.0079)
impt_cereals		0.446** (0.206)			0.480** (0.201)	
expt_cereals		0.360 (0.489)			0.359 (0.486)	
netimpt_c			0.309* (0.185)			0.343* (0.181)
avgdp	0.503 (0.567)	0.497 (0.569)	0.456 (0.569)	0.374 (0.550)	0.369 (0.552)	0.308 (0.551)
avccereals	0.190 (0.295)	0.177 (0.305)	0.115 (0.303)	0.247 (0.288)	0.229 (0.299)	0.163 (0.297)
totpop	14.71*** (3.748)	14.65*** (3.770)	15.74*** (3.704)	15.08*** (3.718)	14.99*** (3.743)	16.14*** (3.677)
surface	-25.54*** (6.681)	-25.37*** (6.774)	-26.81*** (6.716)	-26.19*** (6.637)	-25.93*** (6.738)	-27.51*** (6.676)

*continued on next page*

**Table 17.4** *continued*

	1	2	3	4	5	6
gdp1_share	0.0315 (0.0320)	0.0311 (0.0322)	0.0336 (0.0322)			
gdp2_share	0.00227 (0.0316)	0.00211 (0.0317)	-0.00373 (0.0315)			
trend	0.280*** (0.0892)	0.282*** (0.0900)	0.270*** (0.0898)	0.264*** (0.0875)	0.267*** (0.0885)	0.252*** (0.0882)
constant	-478.6** (190.6)	-483.4** (193.1)	-459.3** (192.8)	-442.0** (186.6)	-449.3** (189.5)	-419.6** (188.9)
Country Fixed Effect	YES	YES	YES	YES	YES	YES
Observation	342	342	342	342	342	342

Note: The numbers in parentheses are standard errors, where \*, \*\*, and \*\*\* indicate significance levels of 10%, 5%, and 1%, respectively.

Sources: World Bank. World Development Indicators; Food and Agriculture Organization of the United Nations.

non-cereals trade and for cereals imports and exports. So, next we try to find instruments only for net import of cereals and then test the causal effect of trade on population urbanization. The instrumental variables used in this chapter are the interaction terms of two variables: the trade openness of neighboring countries and the total cereals yield of the top-five cereals producers in the world (Brazil, Canada, France, the Russian Federation, and the United States). We use these two variables as instruments for the following reasons.

First, it is straightforward that a country's trade openness can be directly affected by its neighbors due to their shared borders. A country is more likely to open if its neighbors have a high level of openness (Rajan and Zingales 2003; Baltagi, Demetriades, and Law 2009). In the following two-stage least squares estimations, trade openness of neighbors will be lagged by 10 years.

Second, total cereals yield of those top-five grain producers and exporters may have an immediate effect on supply and prices in the global grain market. The cereals trade of Asian developing countries will be affected directly by the total cereals production in those five countries whose production is determined by climate, their agricultural endowments, technological progress of agriculture, etc. These factors are obviously unrelated to the socioeconomic variables in Asian developing countries.

Finally, we use the interaction term of these two variables as an instrumental variable because opening up is the precondition for the aggregate grain output of the five main producers to affect urbanization in the relevant countries in Asia. We expect this interaction variable to have a positive effect on its cereals trade in the first stage regression models.

Regression results of the two-stage least squares estimations are reported in Table 17.5. It can be seen that the coefficient of the instrumental is significantly positive in the first stage regressions, which is consistent with theoretic predictions. From the second stage regressions we can find that “*netimpt\_c*” is significantly positive in five models, which suggests that net import of cereals can improve the level of population urbanization in developing Asia. Consistent with the results from earlier studies, the coefficient of GDP per capita is significant and positive in five models. Other results are broadly in line with expectations.

**Table 17.5 Effect of Cereals Trade on Population Urbanization  
(Two-Stage Least Squares Estimation)**

	1	2	3	4	5
<i>netimpt_c</i>	3.612*** (1.355)	3.826*** (1.443)	4.014*** (1.484)	4.012*** (1.484)	4.242*** (1.303)
<i>avgdp</i>	1.852*** (0.631)	2.037*** (0.628)	2.678*** (0.766)	2.678*** (0.766)	2.513*** (0.912)
<i>totpop</i>	4.015 (6.558)	3.655 (6.902)	5.146 (6.664)	5.155 (6.665)	
<i>surface</i>	-1.713 (13.33)	-0.495 (14.09)	-2.722 (13.77)		
<i>gdp1</i>	0.0149 (0.0411)	0.00572 (0.0420)			
<i>gdp2</i>	0.0268 (0.0354)				
<i>trend</i>	0.286** (0.128)	0.289** (0.134)	0.238* (0.123)	0.237* (0.123)	0.327*** (0.0499)
Constant	-604.8** (299.5)	-619.2** (314.8)	-517.8* (294.7)	-552.2*** (140.8)	-636.9*** (97.03)

continued on next page

**Table 17.5** *continued*

	1	2	3	4	5
Country Fixed Effect	YES	YES	YES	YES	YES
Stage-1 regression results					
Instrumental variable	0.00035*** (0.00012)	0.00033*** (0.00011)	0.00033*** (0.00011)	0.00033*** (0.00011)	0.00039*** (0.00011)
Number of observation	516	516	550	550	550

Note: The numbers in parentheses are standard errors, where \*, \*\*, and \*\*\* indicate significance levels of 10%, 5%, and 1%, respectively.

Sources: World Bank, World Development Indicators; Food and Agriculture Organization of the United Nations.

### 17.3.3 Evidence from the Comparison between the People's Republic of China and India

Table 17.6 shows that from 1971 to 2010, total population in the PRC increased by more than 50% while that of India more than doubled. However, the share of urban population in India only increased 10 percentage points, while that of the PRC increased more than 30 percentage points. As will be demonstrated, international trade and grain surplus have played important roles in driving the different pace of urbanization in the PRC and India.

Figure 17.6 depicts trade liberalization in the PRC and India from 1970 to 2008, measured by the ratios of export and import to GDP. Until the end of the 1970s, the two ratios were higher in India than in the PRC,

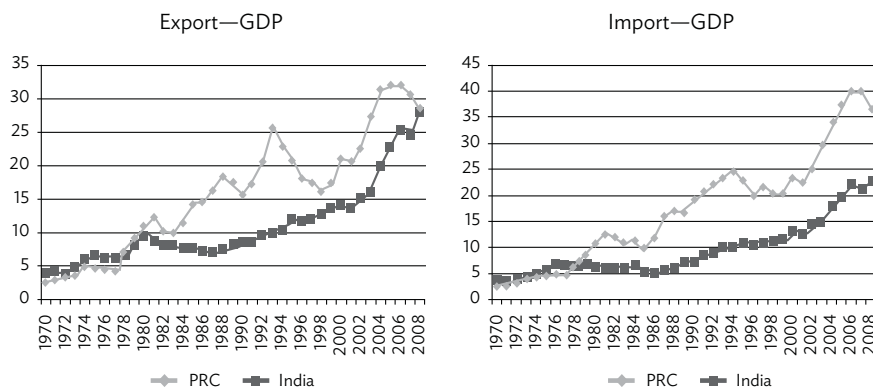
**Table 17.6 Comparison of Population Urbanization between the People's Republic of China and India**

		1971	1981	1991	2001	2006	2007	2008	2009	2010
Total Population (100 million)	PRC	8.52	10.01	11.58	12.76	13.14	13.21	13.28	13.35	13.41
	India	5.51	6.89	8.52	10.33	11.20	11.37	11.53	11.69	11.86
Population Urbanization (%)	PRC	17.26	20.16	26.94	37.66	44.34	45.89	46.99	48.34	49.95
	India	20.10	23.34	25.72	27.9	28.98	29.26	29.54	29.80	30.10

PRC = People's Republic of China.

Sources: China Statistical Yearbook 2012; World Bank, World Development Indicators 2013.

**Figure 17.6 Ratios of Export and Import to Gross Domestic Product in the People's Republic of China and India (1970–2008)**



PRC = People's Republic of China, GDP = gross domestic product.

Source: World Bank. World Development Indicators 2010.

which corroborates the higher urbanization rate in India. This situation was reversed right after the People's Republic of China adopted reform and opening-up policies at the end of the 1970s. Trade liberalization in the PRC has accelerated since then, along with urbanization.

Table 17.7 shows the total and average output of cereals in the PRC and India, which represent the availability of cereals from the domestic agriculture sector.

**Table 17.7 Output of Cereals in the People's Republic of China and India**

		1971	1981	1991	2001	2006	2007	2008	2009	2010
Total output (million tons)	PRC	207.86	272.81	395.66	396.48	450.99	456.32	478.47	481.56	496.37
	India	84.50	104.10	141.90	162.50	170.80	177.70	197.20	192.40	178.00
Per capita output (kilogram)	PRC	377.24	395.95	464.39	383.81	402.67	401.34	414.98	411.94	418.52
	India	153.36	151.09	166.55	157.31	152.50	156.29	171.03	164.59	150.08

PRC = People's Republic of China.

Note: Per capita output equals total output divided by total population.

Data sources: China Rural Statistical Yearbook 2013; and Economic Survey of India 2012–2013, <http://indiabudget.nic.in/es2012-13/estat1.pdf>

Table 17.7 shows that from 1971 to 2010, the total and average output are much higher for the PRC than for India, indicating that peasants in the PRC provide more surplus cereals than India's peasants do. Per capita cereals production in the PRC increased steadily, but this is not the case for India.

Turning to grain trade, Table 17.8 and Table 17.9 report net export of cereals in the PRC and India. Export of cereals outweighs import of cereals in India, but the contrary was true in the PRC, especially after 2008.

**Table 17.8 Net Export of Cereals in India (million tons)**

	1971	1981	1991	2001	2006	2007	2008	2009	2010
India	-2.0	0.5	0.6	4.5	3.8	7.0	14.4	7.2	4.7

Source: Economic Survey of India 2012–2013. <http://indiabudget.nic.in/es2012-13/estat1.pdf>

**Table 17.9 Net Export of Cereals in the People's Republic of China (million tons)**

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
10.73	5.32	0.86	0.54	-5.01	3.87	2.47	8.31	0.27	-1.83	-4.51	-4.29

Source: China Statistical Yearbook 2013.

Coupled with lower farming productivity, more export of cereals in India not only hindered urbanization, it also resulted in serious malnutrition (Gulati et al. 2012). For example, the 2016 global hunger index released by the International Food Policy Research Institute said that 38.7% of India's children under 5 years are stunted due to lack of food,<sup>1</sup> and 42% of underweight children and 32% of stunted children in the developing world are in India.

The above comparison once again illustrates that grain surplus as determined by farm productivity and international trade, especially trade of cereals and grain, exerts very crucial impacts on population urbanization in developing economies.

<sup>1</sup> *News Today*. 2016. 15% of India's population are undernourished. 12 October. <http://newstodaynet.com/nation/15-indias-population-are-undernourished> (accessed 15 November 2016).

## 17.4 Policy Implications

Developing countries have seen a rapid rise in population urbanization and urban concentration after the 1960s. At the same time, they have actively participated in the process of globalization. However, possible interlinks between population urbanization and openness in developing economies have been ignored in the present literature. First, we argue that there is an equilibrium between grain surplus and population urbanization in developing economies and explain why cereals trade can affect population urbanization. Then, historical evidence, empirical tests, and case studies from the PRC and India are employed to test two theoretical hypotheses.

Notwithstanding urban diseases such as congestion, ghetto housing, and crime, the following policies are proposed to make urbanization more sustainable and inclusive.

First, given the interlinkages between trade and urban concentration, economies adopting an export-oriented strategy may see more concentration in harbor or border cities. While one of the goals of the United Nations' SDGs is to “[by 2030] provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.” Thus, more public goods and services shall be provided to these cities, including more roads, schools, hospitals, and so on. Our research points out the direction of such investment providing public goods and services.

Second, as more poor megacities emerge, the challenges of poverty alleviation and weak governance may reduce the ability to address the negative externalities that come with density (Glaeser 2014). Thus, improving governance is urgent to cope with the externality of density. In addition to social protection and unemployment insurance, priority areas of intervention include efficient public policies to cope with crime, intelligent traffic management systems to cope with traffic congestion, public housing to shelter the poor or those in ghetto houses, and sanitation facilities.

Third, one of the goals of the SDGs is to “support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning.” This chapter shows that agricultural development can loosen the grain constraint and promote population urbanization. Consequently, investment in agriculture, including irrigation, soil improvement, and technology upgrades, can help promote population urbanization and

economic growth. Technology assistance from developed countries on improving labor productivity or gross output of food in developing countries is also helpful to fulfill the goals of the SDGs.

Fourth and finally, for small developing countries, or countries that have limited agricultural endowments, importing grains is a possible way to promote sound and orderly population urbanization and sustainable economic growth.



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\* The Asian Development Bank refers to “China” as the People’s Republic of China.

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# 18

## Trade, Infrastructure, and Development

*Marcelo Olarreaga*

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### 18.1 Introduction

Sustainable Development Goal 9 recognizes the importance of regional and international infrastructure to achieve inclusive development. This chapter uses an international trade perspective to examine how regional, national, or international infrastructure can affect economic development.

There is ample literature focusing on the interrelationships between trade, infrastructure, and development. Often, it suggests that these relationships reinforce the positive impact that investments in both national and international infrastructure have on international trade, and, by extension, on development. This chapter, however, aims to better understand why these positive, reinforcing relationships are not always observed. In particular, the role played by initial conditions and complementarities is analyzed to explain the heterogeneity of outcomes vis-à-vis trade reform or investments in national and international infrastructure.

The objective is not to determine whether trade or infrastructure investment is good for development; instead, it is to inform policy makers on their timing so that they can help—rather than hinder—development. This chapter also aims to identify other reforms, policies, institutions, and investments to ensure that trade and infrastructure have a positive impact on development.<sup>1</sup>

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<sup>1</sup> It is important to note that this chapter focuses on economic growth rather than sustainable development. The latter is multidimensional; trying to capture the impact of trade and infrastructure on development would transform this chapter into a volume by itself.

First, the relationship between trade and economic growth is examined from both theoretical and empirical perspectives to highlight the importance of initial conditions in explaining the heterogeneity of outcomes. Second, the literature on the relationship between infrastructure and trade is examined. The last section of the chapter examines whether policy makers should invest their marginal funds on national or international infrastructure.

## 18.2 Does Trade Promote Growth?

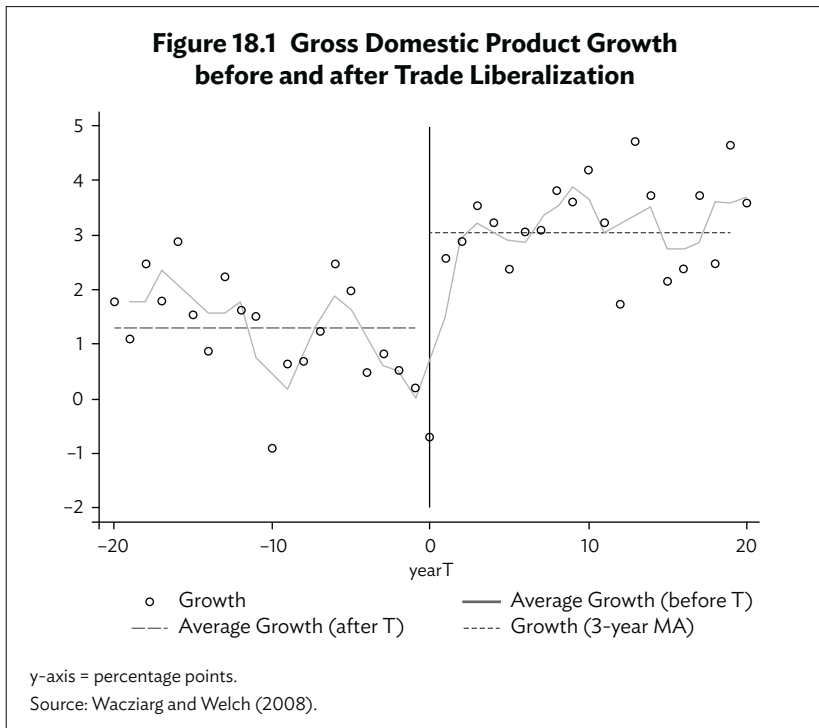
Classical growth theory demonstrates that decreased marginal returns to accumulation of capital result in declining growth in a closed economy. The only source of long-term growth in such models is productivity. Ventura (1997) showed that in the presence of capital accumulation and diminishing returns, international trade allows for long-term growth. He provided a multisector open economy version of the classical growth model where international trade allows factor price equalization to beat diminishing returns to capital, which leads to positive long-term growth without any need for productivity growth.

The key in Ventura's model is that as capital accumulates, the comparative advantage of the economy changes, which alters the composition of aggregate production per the Rybczynski theorem. These changes in the structure of production allow the capital-accumulating country to beat declining marginal returns, and lead to long-run growth. In other words, international trade transforms the classical growth model into an AK model. However, restructuring the production bundle in an economy does not automatically lead to higher growth. Matsuyama (1992) provided an example of this, showing that if trade pushes an economy toward specialization in a sector with low "learning" or growth opportunities, this can lead to lower aggregate economic growth through a composition effect.

When a theory provides ambiguous answers, researchers turn to empirical evidence. Although early empirical literature tend to suggest that trade liberalization is associated with higher growth, Rodríguez and Rodrik (2000) showed that most of this literature was plagued with methodological issues, including the definition of trade reforms, which often used not only trade-related reforms, but also macroeconomic reforms (e.g., Sachs and Warner 1995), and issues of endogeneity and measurement (e.g., Edwards 1998; Frankel and Romer 1999) leading to biased results. Moreover, the use of cross-sectional data from different countries at various levels of development with diverse initial conditions implicitly assumed that the response to trade reforms is homogeneous, but this is unlikely.

Wacziarg and Welch (2008) addressed most of the criticisms in Rodriguez and Rodrik (2000). Making use of the within-country variation in openness to trade and economic growth with a difference-in-difference estimator, they controlled for initial conditions and estimated that when economies open up to trade, gross domestic product (GDP) growth increases, on average, by 2 percentage points (Figure 18.1). They also provided evidence that the mechanism through which GDP grows is due to a sharp increase in investment following trade reforms.

Feyrer (2009a), using a methodology similar to Frankel and Romer (1999), estimated an elasticity of income per capita with respect to trade of 0.5. This circumvented the problem in Frankel and Romer (1999), who used time-invariant geography determinants of bilateral trade to instrument for aggregate trade when explaining variations in income per capita across countries, by using a measure of the time-varying impact of geographic distance on trade (i.e., with technological progress in the international transport sector, the same geographic distance does not have the same impact across time). Feyrer, therefore, instrumented



international trade flows using a measure of time-varying distance; this enabled using bilateral fixed effects to control for time-invariant institutional determinants of income per capita (and trade), which, as argued by Rodríguez and Rodrik (2000), are important omitted variables in Frankel and Romer.<sup>2</sup>

The literature is growing on firm productivity and trade liberalization, which has tended to show that within-firm productivity increases with trade reforms through two main channels: (i) a larger variety of cheaper intermediate inputs and stronger competition, and (ii) a composition effect due to the exit of less-productive domestic firms (Pavcnik 2002; Amiti and Konings 2007; Khandelwal and Topalova 2011). The growth in aggregate productivity through these two channels then partly explains the positive impact of trade reforms on GDP growth. Similarly, the literature on exporting firms and productivity has tended to show that exporting firms are more productive, but that this is mainly due to a selection effect that more productive firms become exporters (Bernard and Jensen 1999). Although most of the existing evidence is for developed countries, recent empirical work using developing country data shows some evidence of “learning-by-exporting,” in which firms become more productive as they start exporting (Van Biesebroeck 2005).

An issue not addressed by recent empirical literature on trade and growth is the potential heterogeneity in the impact of trade reforms on growth. It is only on average that opening up to trade leads to the 2-percentage-point-higher growth in Wacziarg and Welch (2008) and Feyrer (2009a). Perhaps the more interesting question is why some countries grow faster and others slow down when they open up to trade.<sup>3</sup>

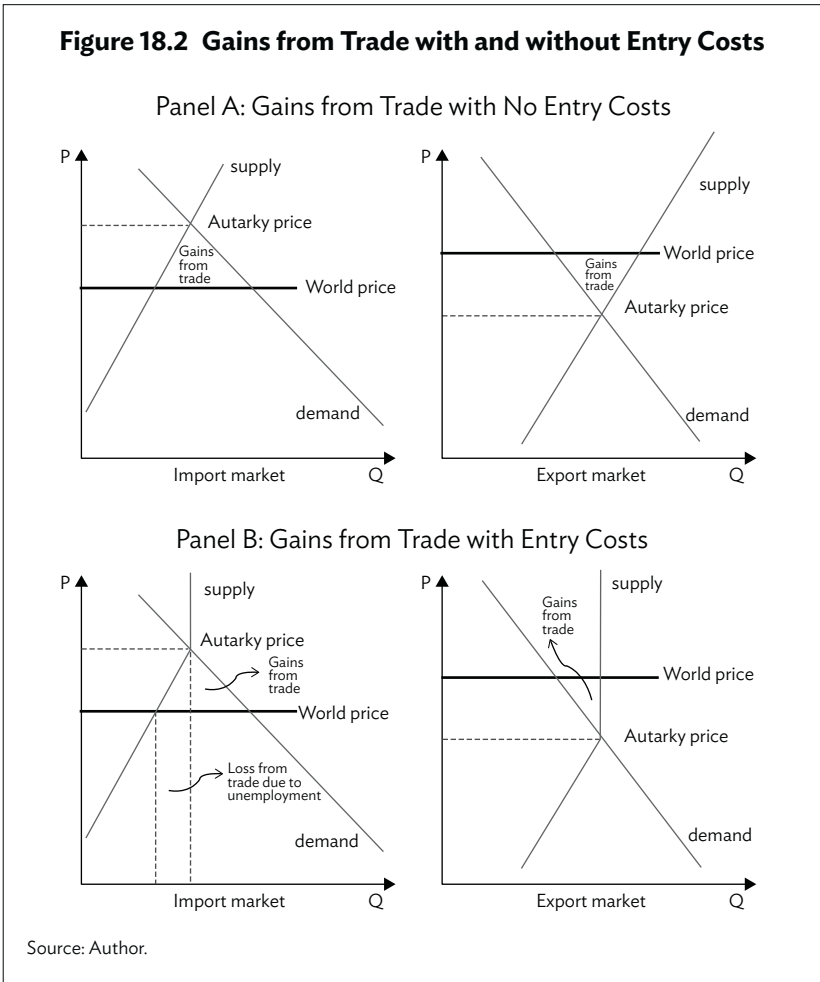
Freund and Bolaky (2008) were among the first to search for systematic differences. Their focus was on whether the sign and size of the impact depend on the flexibility of business regulations in each country. To take advantage of new opportunities offered by trade openness, factors of production need to be reallocated from sectors with relatively low productivity to those with relatively high productivity. For this to occur, business regulations must ensure that firms can exit and enter sectors without facing large costs. Figure 18.2 illustrates the

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<sup>2</sup> Feyrer (2009b) also exploited the idea that the impact of geographic distance can be time varying by using the changes in maritime shipping distance resulting from the closing of the Suez Canal in 1967 and its reopening in 1975. He argued that the shock provoked by the opening and closing of the canal was exogenous and showed that the induced changes in trade had a positive and statistically significant impact on trade flows.

<sup>3</sup> Important inputs into this process are early case studies of episodes of trade reforms in a selected number of developing countries (CUTS International 2008), which explained the heterogeneity of experiences across countries.





importance of entry barriers in determining the gains from trade in a two-sector model with an import-competing and exported good. Panel A illustrates the classic gains from trade when there are no entry costs, while panel B shows the additional losses associated with trade when entry costs do not allow resources to be redeployed from low to high productivity sectors and, as a result, are unemployed.

Freund and Bolaky (2008) empirically examined the role played by regulations in determining the impact of trade on income per capita. They split countries in their sample into those with above-median

regulations and those with below-median regulations in terms of the flexibility granted for the entry and exit of firms. They showed that a positive relationship exists between trade and income per capita, but only in countries with above-median regulations. The relationship is negative, although not statistically significant, for countries with below-median regulations. These results are robust to the introduction of control variables, such as rule of law, distance to the equator, a dummy indicating whether the country is landlocked, and population size.

Chang, Kaltani, and Loayza (2009) built on Freund and Bolaky (2008) in exploring how other types of complementarities affect the relationship between trade and growth in a dynamic panel containing 22 developed countries and 60 developing countries, with, on average, 11 observations per country. Using interaction terms, they examined how the impact of trade reforms on economic growth varies depending on education enrollment, financial depth, inflation, telecommunications infrastructure, governance, labor market flexibility, and firm entry and exit flexibility. They found that higher education enrollment, financial depth, better governance, and telecommunications infrastructure, as well as more labor market and firm entry and exit flexibility, shift, from negative to positive, the impact on GDP growth of a one standard deviation increase in the log of trade–GDP ratio. Thus, they showed that initial conditions do matter and can change the impact of trade reforms on economic growth from positive to statistically insignificant or even negative.

### 18.3 The Role of Infrastructure

As further shown by Chang, Kaltani, and Loayza (2009), the quality of infrastructure (proxied by the number of main telephone lines per capita in their paper) is an important determinant of the impact of trade reforms on economic growth. At the bottom of the sample in terms of quality of infrastructure, increases in trade openness lead to negative growth, while at the top of the distribution, trade openness leads to positive GDP growth.<sup>4</sup>

Yet the number of telephone lines is only a partial indicator of infrastructure. Other literature has examined how many other dimensions of hard infrastructure (e.g., telephone lines and other

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<sup>4</sup> Poor infrastructure may vitiate increases in trade openness, potentially leading to negative GDP growth, because, as in Freund and Bolaky (2008), it hampers reallocating resources to more productive uses.

information and communications technology infrastructure, ports, and roads) and soft infrastructure (e.g., border and transport efficiency, and the business and regulatory environment) affect international trade flows. Most of this literature has used the empirical workhorse of studies in international trade—the gravity equation.

Nordås and Piermartini (2004) were an early example, although their results were not very robust to the introduction of infrastructure variables in the gravity framework. One problem with their approach is that the gravity framework is intended to explain the variation in bilateral trade flows, and infrastructure variables are measured at the aggregate level (i.e., the quality of the importer's port is the same no matter from whom one is importing). They built a bilateral index of infrastructure that combines the levels in the importing and exporting country, which implicitly assumed that they are perfect substitutes for each other.

Helble, Shepherd, and Wilson (2009) focused on how the degree of transparency in setting trade policy affects bilateral trade flows among the Asia and Pacific countries. However, they had the same issue as Nordås and Piermartini (2004), as transparency in trade policy varies at the importer or exporter level, but they circumvented this by accepting potential bias due to the absence of multilateral resistance terms in their gravity specification. Their measure of trade policy transparency partly captured measures of soft infrastructure (e.g., the degree of trade-related corruption, efficiency of customs and border agencies, logistics indicators, as well as the degree of uncertainty in trade policy), and they addressed the problem of endogeneity using ex-British colonies' tending to have more transparent trade regimes. While the degree to which this supposition—being an ex-British colony satisfies the exclusion restriction—cannot be tested (as there is only one instrument), this is one of the rare studies that recognized the problem of endogeneity. Their results showed that transparency in trade policy setting in an importing country positively affects bilateral trade flows, while exporter transparency in trade policy settings seems to have a more ambiguous impact (Table 18.1).

Francois and Manchin (2013) examined the impact of infrastructure and institutional quality on bilateral trade flows using a gravity setup that controlled for zero trade, as well as multilateral resistance, using a method proposed by Baier and Bergstrand (2009). To control for endogeneity of infrastructure and institutional quality, they used their lagged values, like many others in the literature, but these may be inadequate instruments given the important time persistence of variables such as infrastructure and institutions. Nevertheless, consistent with other results in the literature, they found that both

**Table 18.1 Impact of Importer and Exporter Transparency on Trade Flows**

	All Goods	HS > 27	HS > 83	Diff. Goods	Homog. Goods
GDP Importer	0.605*** [0.023]	0.596*** [0.016]	0.599*** [0.018]	0.577*** [0.021]	0.641*** [0.028]
GDP Exporter	0.660*** [0.020]	0.745*** [0.017]	0.789*** [0.016]	0.770*** [0.770]	0.557*** [0.026]
Tariff (RG Weighted)	-0.701 [0.588]	-1.421 [0.988]	-2.121 [1.603]	0.138 [1.194]	-0.875 [0.702]
NTB (RG Weighted)	0.414 [0.469]	-0.951** [0.439]	-1.881** [0.805]	0.076 [0.023]	1.057*** [0.367]
Import Transparency	<b>1.828***</b> [0.302]	<b>1.864***</b> [0.373]	<b>2.583***</b> [0.401]	<b>3.889*</b> [2.533]	<b>1.987</b> [2.049]
Export Transparency	<b>-0.406</b> [0.260]	<b>-0.856***</b> [0.239]	<b>-0.681***</b> [0.199]	<b>3.071*</b> [2.113]	<b>1.939</b> [1.749]
Observations	29,376	21,114	4,284	76,500	50,694

GDP = gross domestic product, HS = harmonized system code, NTB = nontariff barriers to trade, RG Weighted = reference group weighted.

Notes: Robust standard errors in brackets; \* significant at 15%; \*\* significant at 10%; significant at 5%. Estimation method in Poisson QML. Importer and exporter transparency are instrumented by British colonization of the importer and exporter. First-stage F-statistics are 374.68\*\*\* and 306.88\*\*\*, respectively. Reference group weighting is included to circumvent endogeneity problems.

Source: Helble, Shepherd, and Wilson (2009).

infrastructure and institutional quality are important determinants of bilateral trade.

Portugal-Perez and Wilson (2012) also used the gravity framework to examine the impact of hard and soft infrastructure on bilateral trade flows. They found that physical infrastructure is the most robust determinant of bilateral exports, whereas the impact of other variables often changes sign depending on specifications or the estimators used.

Djankov, Freund, and Pham (2010) used a difference gravity equation to solve the problem that most infrastructure variables do not have a bilateral dimension, which is the variation in data used to estimate gravity equations.<sup>5</sup> They found that soft infrastructure does

<sup>5</sup> The problem with the difference gravity equation is that results are sensitive to the choice of reference countries.

matter for international trade; for example, an extra day in the number of days necessary to clear customs in an exporting country leads to a 1% reduction in exports. They also controlled for potential reverse causality, as countries that rely more on export markets may invest more on export infrastructure. To address this, they used a sample of landlocked countries and instrumented the time to export with the time to export in neighboring countries. Note that it is unclear that this solved the potential omitted variable bias, as the time to export in neighboring countries may be a direct determinant of exports in landlocked countries.

Helble (2014) focused on international transport infrastructure, examining how shipping and air cargo connections and frequency among Pacific countries affect their bilateral trade flows. The variables of interest (i.e., direct connectivity and frequency) had a bilateral dimension, and the setup addressed the problem of zeroes and multilateral resistance, as well as endogeneity, using measures of direct connectivity and frequency for passenger flights rather than shipping and cargo flights. The instrumental variable results suggested that having a direct connection and high connection frequency have a large and statistically significant impact on bilateral trade flows.

There is also recent literature on the importance of soft and hard infrastructure on exports at the firm level, more neatly identifying the causal effect. It also has focused more on national rather than international infrastructure. One example is Volpe and Blyde (2013), who utilized the damage caused to roads by a Chilean earthquake (i.e., a natural experiment) to identify the impact of road deterioration on firms' exports, depending on their location. They used a difference-in-difference estimator where the change in exports of firms that were unaffected by the earthquake serves as a counterfactual for those firms that were close to damaged roads. They discovered a large negative and statistically significant effect of the earthquake on firms' exports.

Volpe et al. (2014) used a similar empirical approach to examine the impact of shipping costs on exports. Using another "natural experiment," that is, the closing of the main bridge between Argentina and Uruguay due to an environmental dispute, they investigated how the closing led to higher shipping costs and how it affected exports between the two countries. They found a very large impact; a 1% increase in shipping costs caused a 7% decline in exports.

Some literature also has focused on the impact of soft infrastructure projects related to customs efficiency on firm exports. Volpe, Carballo, and Graziano (2015) noted how the functioning of

customs, and in particular the time it takes to clear them, affects firms' export values. In other words, they addressed a similar question as Djankov, Freund, and Pham (2010), but used firm-level data to identify the causal impact.<sup>6</sup> Endogeneity and reverse causality, in particular, are problematic, as larger and more frequent exporters may face shorter (or longer) customs delays. Utilizing Uruguayan customs data at the transaction level, they solved this with the random allocation of shipments to expedient customs channels, which they used as an instrument for the time spent at customs. They found that customs delays have a negative, large, and statistically significant impact on the value of export shipments.

An interesting point made by Carballo et al. (2016a) is that the time spent at customs is endogenous, as firms will choose different channels or whether to export depending on the length and frequency of delays. Therefore, any ranking of customs efficiency based on actual time spent will be biased by a composition effect. More importantly, they showed that the impact of customs delays is heterogeneous across firms; in particular, new firms are more elastic to them. This may be because unexpected delays hurt the reputation of new firms more than that of established firms.

Another question is whether export programs aimed at facilitating trade for small firms are effective. An example of such a program is Peru's *Exporta Fácil*, which allows for the export of small shipments (i.e., below \$2,000 and a maximum of 30 kilograms) through Peru's postal system using simplified export procedures. Carballo, Schaur, and Volpe (2016a) examined its impact on exports and found that the program boosts exports mainly through the extensive margin, allowing smaller firms to enter new markets with new products. The survival rate of new exporting firms seems also to be much larger for those firms using the program. Trade facilitation programs can, therefore, have larger impacts on smaller firms.

Indeed, the development of online platforms such as eBay, Alibaba, and Amazon that allow small firms to access customers in distant countries, combined with trade facilitation programs such as *Exporta Fácil*, has the potential for making trade more inclusive by allowing smaller, less-productive firms in various countries to reach international customers. Lendle et al. (2016) showed that geographic distance matters much less for online platforms than offline, and that,

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<sup>6</sup> They also had information of the actual time spent by each shipment at customs, rather than the time reported by a few customs operators, as in the World Bank's *Doing Business* database.

through feedback mechanisms, they allow for the creation of a good reputation at a relatively low cost. This explains why small firms can access a large number of distant export markets and have higher survival rates than offline firms (Lendle et al. 2013). This literature also suggests that the combination of trade facilitation programs with those providing access to online platforms to small firms in remote areas can be effective for spreading the benefits of globalization where they are most needed.

More generally, the simplification of customs procedures through the introduction of electronic customs single windows (Carballo et al. 2016b) or implementation of authorized economic operator programs (Carballo, Schaur, Volpe 2016b) that simplify procedures for trustworthy firms generate increases in firms' exports along both the intensive and extensive margins.

## 18.4 National Versus International Infrastructure

As shown by the previously reviewed literature, national and international infrastructure tend to have a positive impact on exports. However, should public investment in infrastructure be targeted toward national or international infrastructure?

Recent evidence by Atkin and Donaldson (2015) suggested that the answer to this question may be country-specific. They showed that in Ethiopia and Nigeria, national trade costs may be 4–5 times larger than in the United States, implying a greater need for investment in national infrastructure in Ethiopia and Nigeria.

Martin and Rogers (1995) put forward a theoretical model of firm location that addresses this question, with a focus on GDP per capita. In their model, trade integration implied that, in the presence of economies of scale, firms tend to locate in countries with better national infrastructure, as they offer lower costs to serve all markets. Better international infrastructure magnifies the industrial relocation of firms toward a country with better national infrastructure.

This, of course, has implications for developing countries, which tend to have poor infrastructure. Investment in national infrastructure will help the relocation of firms to developing countries, which become more attractive. However, investment in international infrastructure will make it more attractive to serve the developing country market from countries with better national infrastructure. Thus, if investment

in national and international infrastructure unambiguously makes infrastructure-rich countries more attractive, this is not the case for countries with poor infrastructure—only investment in national infrastructure will make countries with poor infrastructure more attractive to investors.

The prediction of Martin and Rogers (1995) has not been empirically tested due to a measurement problem (i.e., it is difficult to distinguish between national and international infrastructure, as it cannot be known if the road from the firm to the port qualifies as national or international) and an endogeneity problem in trying to assess the impact of infrastructure on income.

This study tries to circumvent these two issues. The measurement problem is partly solved by new databases with bilateral trade costs made available by Novy (2013) and Arvis et al. (2015), who used these data and the gravity framework to back out costs between countries. It is important to note that trade costs do not only imply bad infrastructure, but they are affected by it in turn. Moreover, the logic of Martin and Rogers (1995) carries over to other determinants of national and international trade costs.

One problem with the existing bilateral trade cost data set is that the methodology only captures costs relative to the geometric national trade average in an exporting and importing country. To test Martin and Rogers (1995), a measure of international trade costs relative to national ones in each country is needed—not one relative to the average domestic costs of an importing and exporting country. Thus, this study must work at the regional rather than country level to focus on intraregional (as a proxy for national) to extraregional (i.e., international) infrastructure. The 22 United Nations geographic regions are used (four in the Americas, five in Asia, five in Africa, four in Europe, and four in the Indian Ocean), and then the ratio of intraregional to extraregional trade costs for each are measured.

Note that this does not completely solve the problem. The intraregional trade costs now capture the average intraregional trade costs relative to the geometric mean of national costs within the region, which is the type of measure necessary. However, to only use this measure would potentially suffer from an omitted variable bias, as extraregional trade costs are excluded. However, using the ratio of intraregional to extraregional trade costs is problematic, as the extraregional trade costs are actually given by the ratio of those relative to the geometric mean of national costs in the region and rest-of-the-world trading partners. The assumption necessary is at the regional level, as the ratio of regional to extraregional national trade costs



is relatively constant across time and can be captured by a regional dummy.<sup>7</sup>

The endogeneity problem of national and international infrastructure is usually addressed using an instrumental variable estimator, but, as discussed above, it is difficult to identify a variable that will correlate with infrastructure (or trade costs) but otherwise not correlate with international trade or income. The solution to this is not to focus on the impact of national or international infrastructure, but on the ratio of national to international infrastructure (i.e., the ratio of international to national trade costs). The idea is that if national and international infrastructure (i.e., trade costs) are likely to be endogenous to economic activity, the ratio is less likely to be affected by economic activity. In other words, the identifying assumption is that anything that may be simultaneously affecting infrastructure and income is affecting national and international infrastructure in a similar way, so it does not create an endogeneity problem.

Further, any omitted variable bias that is country- or time-specific is addressed by using a set of country- and time-specific fixed effects. The test of the Martin and Rogers (1995) prediction is given by:

$$\ln y_{r,t} = \alpha_r + \alpha_t + \beta \ln r_{r,t} + \delta D_{r,t} + \gamma D_{r,t} \ln r_{r,t} + \epsilon_{r,t} \quad (1)$$

where  $y_{r,t}$  is a measure of economic activity (GDP per capita) in country  $r$  at time  $t$ ,  $r_{r,t}$  is the ratio of intraregional (national) to extraregional (international) trade costs; this ratio is positively correlated with the ratio of international to national infrastructure;  $D_{r,t}$  is a dummy taking the value of 1 when region  $r$  at time  $t$  has a level of intraregional to extraregional trade costs that are above the median (trade costs above the median imply that infrastructure is below the median, everything else being equal);  $\epsilon_{r,t}$  is an identical and independently distributed error term;  $\alpha$ s are fixed effects that control for anything that is region or time invariant; and  $\beta$ ,  $\gamma$ , and  $\delta$  are parameters to be estimated.

The parameter of interest is  $\gamma$ , which, according to Martin and Rogers (1995), is expected to be negative. Indeed, in countries with poor infrastructure, an increase in the ratio of regional to international trade costs (i.e., a reduction in the ratio of national to international

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<sup>7</sup> Note that there is a tension with the argument here. As the region level is aggregated, country-specific shocks are averaged out; however, because the rest of the world becomes smaller (as the unit of observation becomes the region) the averaging out of specific shocks in the rest of the world becomes less effective. As an alternative, the same econometric specifications are run at the country level, and then the country-fixed effects will capture the ratio of national trade costs to rest-of-the-world national trade costs.

**Table 18.2 Intra-regional to Extraregional Trade Cost Ratio and Gross Domestic Product per Capita, 1995–2012**

	No Dummy	Dummy at 50th Percentile	Dummy at 50th Percentile (intra)	Dummy at 50th Percentile (country)	Dummy at 25th Percentile	Dummy at 75th Percentile
Log (intra/extra)	0.10 (0.09)	0.31** (0.10)	0.22 (0.09)	0.15 (0.21)	0.36** (0.16)	0.20* (0.09)
Dummy for high intra/extra		-0.46** (0.11)	-0.33** (0.11)	-4.28** (1.63)	-0.32 (0.21)	-0.21* (0.10)
Dummy high* log (intra/extra)		-0.74** (0.18)	-0.62** (0.18)	-0.92** (0.33)	-0.29 (0.20)	-0.30 (0.24)
R2	0.53	0.55	0.55	0.21	0.53	0.53
Number of observations	354	354	354	2,481	354	354

Notes:

1. All columns contain region- and year-fixed effects.
2. Robust standard errors are in parentheses.
3. \*\* stands for statistical significance at the 1% level, and \* for statistical significance at the 5% level.
4. In the first column, no dummy is introduced to split regions into high and low intra-regional to extraregional trade costs.
5. In the second column, each year's median is used to split regions into high and low intra-regional to extraregional trade costs.
6. In the third column, the 25th percentile is used, and in the fourth column, the 75th percentile of the distribution of intra-regional to extraregional trade costs every year.
7. The fifth column uses the distribution of intra-regional trade costs to split the sample at the median.
8. The sixth column uses country-level data rather than region-level data, and the ratio is then of national to international trade costs (the inverse of the estimates in Arvis et al. 2015).

Source: Author's estimation.

infrastructure) should lead to a reduction in economic activity in the region. The results of the estimation of equation 1 are reported in Table 18.2.

The first column reports a regression of the ratio of GDP per capita on intra-regional to extraregional trade costs, as well as region- and year-fixed effects, suggesting that a correlation does not really exist between the two. However, as the second column illustrates, once the nonlinearities in Martin and Rogers (1995) are allowed and an interaction of the ratio of intra-regional to extraregional trade costs are introduced with a dummy that signals that the ratio is above the median of the distribution, a negative, large, and statistically significant coefficient is obtained in the interaction of the relative cost of intra-regional to extraregional trade costs, with a dummy variable indicating that the region has above-median intra-regional to extraregional trade costs—

the prediction of Martin and Rogers (1995). In countries where the intraregional infrastructure is relatively bad, a deterioration of the ratio of intraregional to extraregional infrastructure hurts growth. Note that deterioration in this ratio can be achieved by improving the extraregional infrastructure while leaving the intraregional infrastructure unchanged. Thus, in countries with relatively poor national infrastructure relative to international infrastructure, priority should be given to investments in national infrastructure.

In the third column, the distribution of intraregional trade costs is used instead of the distribution of intraregional to extraregional trade costs to split the sample at the median, and similar results are obtained to the ones in the second column. The reason for this robustness test is that the intraregional trade costs at the regional level are not contaminated by the national trade costs in the rest of the world.

In the fourth column, the level of observation is the country—not the region. As discussed above, the measures of international trade costs in Arvis et al. (2015) are actually the ratio of international trade costs to the geometric mean of national trade costs between the importer and exporter. As long as all countries are small, the rest-of-the-world national trade costs may be captured by the year dummies. Because their measure is the ratio of international to national costs, the inverse is taken to make them comparable with the intraregional (as a proxy for national) to extraregional (as a proxy for international) trade costs. Results in the fourth column confirm that the coefficient on the interaction is negative and statistically significant.

In the fifth and sixth columns, how sensitive the results are to splitting of the sample at the median is tested. In the fifth column, the same is split at the 25th percentile, and in the sixth column, it is at the 75th percentile. Although the coefficient on the interaction is always negative, it is not statistically significant, which suggests that results are not very robust to the choice of threshold. This may have been expected from the Martin and Rogers (1995) model, which did not specify the level of threshold at which the change in regime occurs. Nevertheless, these results call for some further robustness or confirmation that a split at the median is reasonable.

To examine whether the split of the sample at the median is a reasonable assumption, a Hansen (2000) threshold model estimation is followed, rewriting equation 1 as a two-regime model:

$$\ln y_{r,t} = \alpha_r + \alpha_t + \gamma D_{r,t} \ln r_{r,t} + \rho(1 - D_{r,t}) \ln r_{r,t} + \epsilon_{r,t} \quad (2)$$

where  $\gamma$  captures how the ratio of intraregional to extraregional trade costs affects GDP per capita in a regime with relatively high

intra-regional to extra-regional trade costs (i.e., relative poor intra-regional infrastructure), and  $\rho$  captures the impact on GDP per capita of intra-regional to extra-regional trade costs when in a regime with relatively low intra-regional to extra-regional trade costs (i.e., a relatively good intra-regional infrastructure).

The threshold at which one shifts from one regime to another is estimated as follows. Equation 2 is estimated for all the percentiles of the distribution of intra-regional to extra-regional trade costs by constructing a new dummy  $D_{r,t}$  for each percentile. The estimated threshold is the one that minimizes the sum of squared residuals.<sup>8</sup> The results are reported in Table 18.3.

The first column estimates equation 2 using an exogenous threshold at the median. It is the equivalent of the second column in Table 2 and confirms that for countries with intra-regional to extra-regional trade costs above the median, an increase in the ratio leads to a decline in

**Table 18.3 Identifying the Two Regimes**

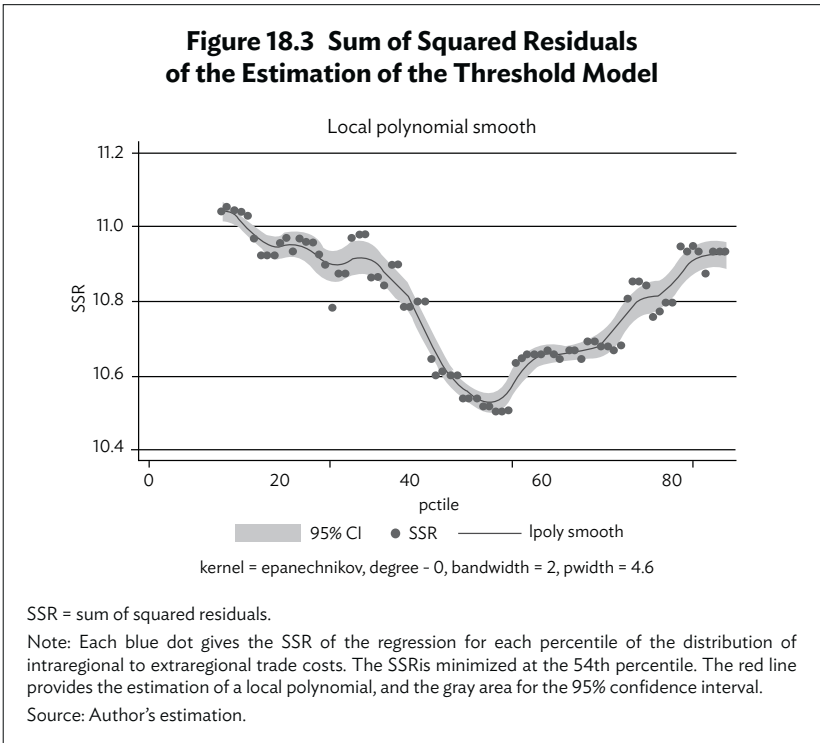
	Dummy at 50 <sup>th</sup> Percentile	Estimated Threshold
Dummy*Log (Intra/Extra)	-0.44** (0.16)	-0.41** (0.16)
(1-Dummy)*Log(Intra/Extra)	0.31** (0.10)	0.32** (0.10)
R <sup>2</sup>	0.55	0.55
Number of observations	354	354

Notes:

1. All columns contain region- and year-fixed effects.
2. Robust standard errors are in parentheses.
3. \*\* stands for statistical significance at the 1% level, and \* for statistical significance at the 5% level.
4. In the first column, each year's median is used to split regions into high and low intra-regional to extra-regional trade costs.
5. In the second column, a Hansen (2000) threshold model is used.
6. The optimum threshold is estimated at the 54th percentile and is statistically different from zero (see also Figure 3).

Source: Author's estimation.

<sup>8</sup> Following Hansen (2000), the statistical significance of the threshold is tested as follows. The threshold is statistically different from zero at the  $\alpha\%$  confidence level if the likelihood ratio statistics described by the expression  $n(S(0) - S^*)$  (where  $S^*$  is the minimum sum of squared residuals at the estimated threshold,  $S(0)$  is the sum of squared residuals if the threshold is set at 0, and  $n$  is the number of observations is greater than  $-2\ln(1 - \sqrt{1 - \alpha})$ .



GDP per capita, while for countries with a ratio of intraregional to extraregional trade costs below the median, an increase in the ratio leads to an increase in GDP per capita. The second column estimates a Hansen (2000) threshold model.

Figure 18.3 shows the sum of squared residuals of regressions for different percentiles. The minimum is achieved at 54%, slightly above the median. The threshold is statistically different from zero, and results are very similar to the ones reported for the median in the first column.

Thus, the threshold model confirms that there are two regimes. For countries with relatively low intraregional to extraregional trade costs, the priority should be to reduce extraregional trade costs by investing in extraregional trade infrastructure so that the ratio increases and leads to increased GDP per capita. In countries with relatively high intraregional to extraregional trade costs, the priority should be to reduce intraregional trade costs by investing in intraregional infrastructure so that the ratio declines and leads to increased GDP per capita. These results confirm the theoretical predictions in Martin and Rogers (1995).

## 18.5 Conclusion

The survey of the literature on trade, infrastructure, and development shows that trade openness has, on average, had a positive impact on economic growth, but some important heterogeneity across countries exists in this relationship. In particular, how much countries benefit from further integration into global markets depends on the initial conditions in each country. Among these initial conditions, the quality of infrastructure matters. Microeconomic and macroeconomic evidence shows that better national and international infrastructure lead to higher levels of trade. This is also true for both soft and hard infrastructure associated with trade facilitation. Importantly, trade facilitation programs that aim to help small exporters have a large impact along the product- and market-extensive margins of small firms.

However, as theoretically shown in a location model by Martin and Rogers (1995), more trade does not necessarily mean higher economic activity in a country investing in international infrastructure. If countries with relatively poor national infrastructure and therefore higher domestic production costs invest in international infrastructure, they will help orient the relocation of firms toward other countries with better national infrastructure and lower costs.

This chapter further shows that this prediction is supported by data on international trade costs, in particular those estimated by Arvis et al. (2015). Increases in the ratio of national to international trade costs hurt GDP per capita in countries with relatively high national to international trade costs, but helps GDP per capita in countries with relatively low national to international trade costs. This implies that in countries with relatively poor national infrastructure relative to international infrastructure, the priority should be given to improvements in national rather than international infrastructure. Similarly, in countries with relatively poor international infrastructure relative to national infrastructure, the priority should be given to improvements in international rather than national infrastructure.

Another implication of the Martin and Rogers (1995) model is that investment in soft infrastructure (e.g., trade facilitation programs) enhances growth as long as it promotes exports, which is supported by the existing empirical evidence. However, it is important to note that 90% of aid-for-trade is granted to hard infrastructure.

Sustainable development by definition is much broader than economic growth. The impact that investment in national versus international infrastructure may have on other dimensions of development is questionable. The relationship is unlikely to be linear, and further work should explore this question. Different trade-offs on

investments in infrastructure must also be noted and explored: quality versus quantity, maintenance versus new infrastructure, financing with user fees versus subsidies, or universal services versus cost efficiency. The answers to these questions are likely to be country- and investment-specific and depend to a large extent on the development objectives of each country.

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# 19

## Facilitate Trade for Development: Aid for Trade

*William Hynes and Frans Lammersen*

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### 19.1 Introduction

Meeting at a special summit at the United Nations in September 2015, world leaders committed to an ambitious global agenda: Transforming our World: The 2030 Agenda for Sustainable Development. The Agenda is a plan of action for people, planet, prosperity, peace, and partnership with the Sustainable Development Goals (SDGs) at its core. The SDGs are aimed at promoting inclusive, sustainable, and resilient growth and development. International trade can help realizing the SDGs as a key transmitter of goods and services, technology, knowledge, and behavior. Successive rounds of multilateral trade liberalization, increasing numbers of preferential market access schemes and regional free trade agreements as well as expanding South–South trade have created many more trading opportunities for developing countries.

To fulfill the potential of trade, developing countries and particularly the least developed require technical and financial assistance to connect and compete in international markets. Obsolete or ill-adapted infrastructure, limited access to trade finance, the complexity and cost of meeting an ever broadening array of standards, and cumbersome and time-consuming border procedures all price too many developing country firms out of international markets. During the last 10 years, the global community has promoted aid for trade to help developing countries tackle these obstacles. A total of \$300 billion has been disbursed for financing aid-for-trade programs and projects since the Initiative was launched in 2006. Moreover, middle-income countries received an additional \$190 billion in other trade-related official flows. There is now abundant evidence suggesting that aid for trade has been effective in reducing trade and transport costs, promoting trade expansion, and achieving economic and social objectives.

Aid for trade is part of SDG 8 aimed at promoting sustained, inclusive, and sustainable economic growth, full and productive employment and decent work for all. The goal calls to “increase aid-for-trade support for developing countries, in particular least developed countries (LDCs), including through the Enhanced Integrated Framework” (United Nations 2015). This echoes the call in the Addis Ababa Action Agenda of the Third International Conference on Financing for Development that “Aid for Trade can play a major role and should strive to allocate an increasing proportion going to least developed countries, provided according to development cooperation effectiveness principles” (United Nations 2015).

Both the SDGs and the aid-for-trade objectives are dependent on integrated policy approaches and trade-offs. Achieving the SDGs requires a transformation of the world economy. This implies that aid for trade should contribute to economic objectives of developing countries by helping their firms connect to international markets, expand trade, and strengthen its contribution to inclusive economic growth; to social objectives by reducing poverty and inequalities; and to environmental objectives through preserving the environment and adapting to climate change while exploiting comparative advantages in low-carbon production and environmental goods and services. In addition, aid for trade can help developing countries build resilience and adjust to shocks that ripple through international markets.

The chapter analyzes how aid for trade can best help achieve the 2030 Agenda for Sustainable Development. It will do so by reviewing past aid-for-trade priorities, policies, and programs and assessing their contribution to sustainable development. Special attention will be paid to the role of aid for trade in promoting (green) growth and reducing poverty for men and women. This, together with a review of the aid-for-trade literature will be used to propose approaches to better facilitating trade for development and strengthening the contribution of aid for trade to the 2030 Development Agenda. Particular attention will be paid to the role the private sector can play.

## 19.2 Aid for Trade

History shows openness to trade to be a key ingredient for economic success and raising living standards. Countries that have pursued an outward-oriented development strategy with trade liberalization at its center not only outperformed inward-looking economies in terms of aggregate growth rates, but also succeeded in lowering poverty rates and registering improvements in other indicators of social progress.

However, developing countries require assistance to analyze, negotiate, and implement trade agreements and benefit from the resulting increased market access, while some have argued that the costs of implementing multilateral trade agreements are substantial and reflect little awareness of the capacity constraints of developing countries (Finger and Schuler 2000).

The first World Trade Organization (WTO) Ministerial Conference, held in 1996, acknowledges that the least developed countries faced these types of constraints. This led to the creation of the Integrated Framework, which was mandated to improve the capacity of the least developed countries for trade policy formulation and implementation. However, the Integrated Framework had modest success and trade rarely featured as a priority of either donors or recipients (WTO 2006a). Although donors did scale up their support to build capacities for designing trade policy and regulations, especially at the start of the Doha Round in 2001, a larger, more holistic effort was needed.

The UN Millennium Project (2005) called for supporting the poorest countries by putting in place measures to enhance competitiveness and productivity as well as to address adjustment costs. A significant increase in “aid for trade”—that is, development assistance dedicated to increasing the recipient country’s trade capacity—would help to ensure that more countries benefit from trade opportunities. Domestic supply constraints and high operating costs are the main reason for the lack of trade growth and diversification in many of the poorest developing countries. Prowse (2006) argued that without action to improve supply capacity, reduce transport costs, facilitate movement of goods across borders, connect farmers to markets, among others, trade opportunities cannot be fully exploited and the potential gains from trade will not be maximized.

At the Sixth WTO Ministerial Conference held in Hong Kong, China in 2005, ministers recognized the need to move beyond just offering increased market access. Consequently, they launched the Aid for Trade Initiative to “help developing countries, particularly LDCs, build the supply-side capacity and trade-related infrastructure that they need to implement and benefit from WTO Agreements and more broadly to expand their trade.” Furthermore, “effective aid for trade should enhance growth prospects, reduce poverty, complement multilateral trade reforms, and distribute the global benefits of trade more equitably across and within developing countries” (WTO 2006b).

The remainder of this section reviews tools to identify binding trade-related constraints first. Next, it assesses the extent to which the aid-for-trade objectives have been met since the Initiative was established 10 years ago. In particular, the section will discuss whether

trade has been mainstreamed as a priority in the development strategies of partner and donor countries, whether donors have increased their support, and whether this support has been effective.

### **19.2.1 Identifying Constraints**

Developing countries are often confronted by two types of binding constraints. It is unrealistic to address all needs and implement all required reforms simultaneously. Political capital for reform is at least as scarce as financial resources and both should be invested where maximum impact can be expected. Thus, rather than indiscriminately tackling a country's laundry list of needs, the focus should be on identifying and tackling the most binding constraints, i.e., addressing first those that can have the greatest impact on expanding trade and promoting economic growth. Sound sequencing of reforms and projects are also critical in the design and implementation of effective aid-for-trade interventions.

Various diagnostic tools are available for identifying binding constraints. Stakeholder consultation, benchmarking, diagnostic trade integration studies, and value chain analysis can all be used to pinpoint the trade needs and constraints preventing developing countries from expanding trade. All these methods have advantages, but also suffer from various shortcomings and limitations. Hallaert, Cavazos Cepeda, and Kang (2011) suggest combining the different diagnostic tools in an appropriate framework to achieve prioritization. Combining the various tools can help overcome the shortcomings and limitations of each diagnostic tool. It can also provide evidence for use in confirming the conclusions of any single approach and reduce the risks of misdiagnosis or capture by vested interest.

An adaptation of the growth diagnostics—originally developed by Hausmann, Rodrik, and Velasco (2006) for guiding growth strategies—can provide an appropriate framework. By shifting the focus from growth to trade, this framework can be easily adapted by local authorities and development practitioners. The framework employs a decision tree to prioritize reforms and “get the biggest bang for the reform buck.” At each node of the decision tree, stakeholder consultation, benchmarking, and a value-chain approach can be used to rank the constraints. Drawing on a tool from the Enhanced Integrated Framework (EIF) for least developed countries, a Diagnostic Trade Integration Study action matrix can then be used to identify the actions and reforms needed, as well as the sources of potential external financial support and technical assistance. This approach would have the advantage of increasing participation and

ownership by stakeholders and, consequently, the chances of success of the reforms and of aid-for-trade interventions.

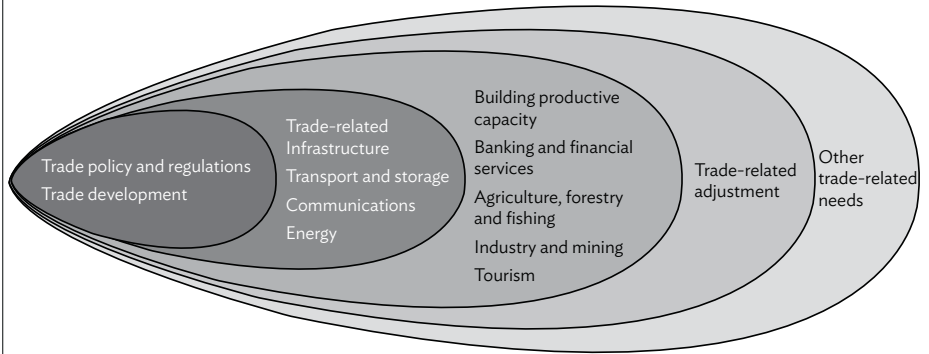
## **19.2.2 What Has Been Achieved?**

### **Prioritizing Trade as a Tool for Development**

Central to the Aid for Trade Initiative is the notion that trade should be (better) prioritized in the strategies of developing countries and donor agencies. Brenton and Gillson (2014) find that while progress has been observed in mainstreaming trade in the strategies of developing countries, capacities among them remain rather uneven. The high number of developing countries that have actively participated in successive monitoring exercises that underpin the biennial Global Reviews of Aid for Trade, as well as a recent review of the Diagnostic Trade Integration Studies undertaken by the Executive Secretariat of the EIF, suggest that progress in this area continues. In addition, most donor agencies have reported that they have specific aid-for-trade strategies and some donors such as the European Commission and the United Kingdom are now in the process of updating these. Sometimes this is being done in the context of their broader private sector development strategy such as, for instance, in the case of Germany and the Netherlands.

### **Setting Aid-for-Trade Benchmarks**

Prioritizing trade as a tool for economic growth and poverty reduction was expected to result in securing “additional, predictable, sustainable and effective financing for building trade capacities in developing countries” (WTO 2006a). To assess additionality and ensure accurate accounting at the global level, WTO members agreed on aid-for-trade benchmarks that were based on donor reporting to the Organisation for Economic Co-operation and Development (OECD) Creditor Reporting System (CRS). These CRS proxies include official development assistance (ODA) and other official flows (OOF) to help developing countries elaborate trade development strategies, negotiate trade agreements, and implement their outcomes; build roads, ports, and telecommunications networks to better connect domestic firms to the regional and global markets; support the private sector in exploiting their comparative advantages and diversifying their trade; help countries pay for the costs associated with trade liberalization such as tariff reductions, preference erosion, or declining terms of trade; and, finally, other trade-related needs if identified as trade-related priorities in the national development strategies of partner countries (Figure 19.1).

**Figure 19.1 Aid-for-Trade Creditor Reporting System Proxies**

Source: OECD (2006a).

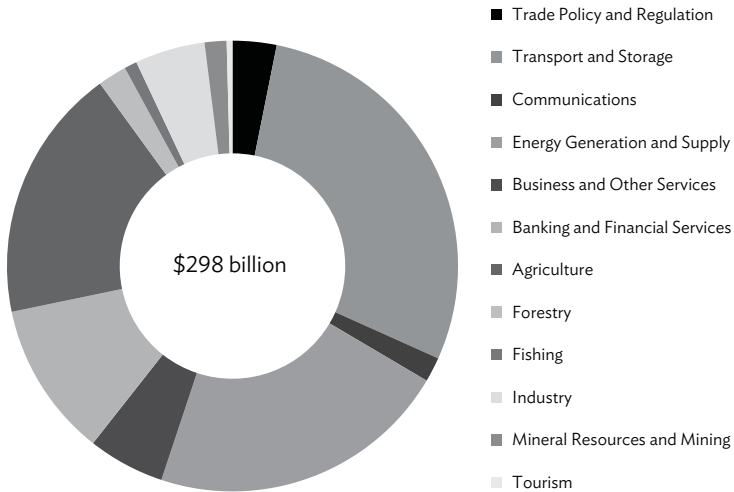
### More Aid for Trade

Since the Aid for Trade Initiative was launched in 2006, a total of \$298 billion in ODA has been disbursed by bilateral and multilateral donors for financing aid-for-trade programs and projects. Support for programs aimed at reducing the infrastructure gap in developing countries received \$155 billion, while programs targeted at building productive capacities took \$133.9 billion. Aid for trade in its narrowest sense of support for trade policy and regulation attracted a total of \$9.4 billion and \$183.1 million was spent on easing trade-related adjustment cost; one of the original arguments for the Aid for Trade Initiative. To date, almost 85% of total aid for trade has financed projects in four sectors: transport and storage (28.6%), energy generation and supply (21.6%), agriculture (18.3%) and business services (5.5%) (Figure 19.2). Geographically, 146 developing countries mainly in Asia (38.2%) and Africa (35.7%) received aid-for-trade assistance. In terms of population, the least developed countries took \$11.1 per capita in aid for trade, the highest amount compared with other income groups and almost double the overall average aid for trade per capita.

In 2015, ODA commitments reached \$53.8 billion, an additional \$31.5 billion or 141% in real terms compared with the 2002–2005 baseline average (Figure 19.3). This increased the share of aid for trade in sector-allocable aid from an average of 32.5% during the

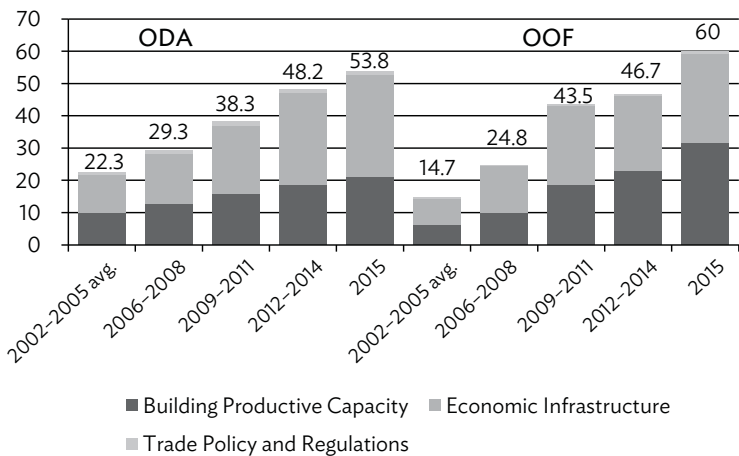


**Figure 19.2 Aid-for-Trade Disbursements**



Source: OECD/DAC Creditor Reporting System.

**Figure 19.3 Official Development Assistance and Other Official Flows Trade-Related Commitments 2002-2014 Sector Distribution (\$ billion 2015 prices)**



ODA = official development assistance, OOF = other official flows.  
Source: OECD/DAC Creditor Reporting System.

baseline period to 33.3% in 2015. Thus, within the expanding ODA budget envelope the share of aid for trade has increased even more. The 2.2 basis point increase could be considered as additional aid for trade.

In addition, \$248 billion in gross trade-related OOFs has been disbursed since 2006. The large increase was a countercyclical payout coordinated by the international finance institutions after the 2007–2008 financial crisis. Most of this non-concessional funding supported projects in economic infrastructure (47.5%) and building productive capacities (51.6%) and almost exclusively in middle-income countries (96%). Asia is also the main beneficiary of trade-related OOF at \$103.3 billion, or 41.6% of the total support. At \$40.8 billion, Africa is surpassed by Latin America and the Caribbean and also Europe with \$42.2 billion and \$58.4 billion, respectively.

### **Positive Empirical Findings**

The significant amounts of ODA and OOF spent on supporting developing countries upgrade their infrastructure, invigorating the private sector, and streamlining trade policies should show results. Empirical findings confirm that aid for trade, in general, is effective at both the micro and macro level. The impacts, however, may vary considerably depending on the type of aid-for-trade intervention, the income level, the sector at which the support is directed, and the geographic region of the recipient country. For example, Vijl and Wagner (2012) shows that the quality of infrastructure is significantly positively correlated with aid to infrastructure. Ferro, Portugal–Perez, and Wilson (2012) find that a 10% increase in aid to transportation, information, communication and technology, energy, and banking services is associated with increases of 2.0%, 0.3%, 6.8%, and 4.7%, respectively, in the exports of manufactured goods from the recipient countries. Cirera and Winters (2015) observe a positive impact on exporting and importing times, but factors other than aid for trade explain different experiences of structural change in sub-Saharan African countries.

An evaluation of USAID (2010) trade assistance, which focused on export expansion, trade policy reforms, increased participation in trade agreements, and efficiency gains from trade facilitation assistance, finds that each additional United States (US) dollar increases the value of developing country exports by \$42 2 years later. Helble, Mann, and Wilson (2012), assessing the relationship between different aid-for-trade categories and trade performance, find that a 1% increase in aid-for-trade facilitation could generate a \$415 million increase in global trade. OECD/WTO (2013a) finds that \$1 invested in aid for trade is on

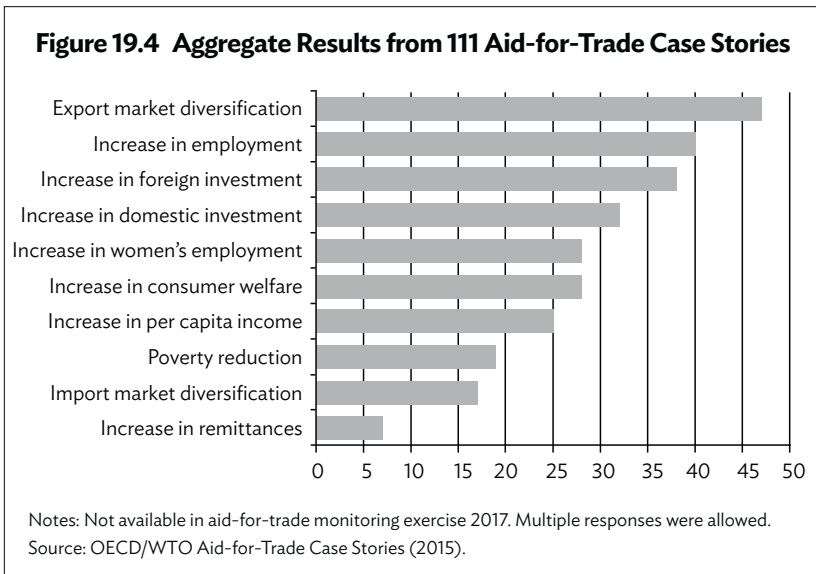
average associated with an increase of nearly \$8 in exports from all developing countries and an increase of \$20 in exports from the poorest countries. These effects were found to be even more pronounced for exports of parts and components. Hühne, Meyer, Nunnenkamp (2014) establish that aid for trade increases recipient exports to donors as well as recipient imports from donors with the former dominating the overall positive effects. This corroborates similar findings and contradicts the skeptical view that donors grant aid for trade primarily to promote their own export interests.

Aid for trade also has great potential to reduce trade costs. Cali and te Velde (2011) found that an increase of \$1 million in aid-for-trade facilitation associated with a 6% reduction in the cost of packing, loading, and shipping. Busse, Hoekstra, and Königer (2012), using panel data for 99 developing countries for the period 2004–2009, show that aid for trade is closely associated with lowering trade costs and therefore may play an important role in helping developing countries benefit from trade. Gnangnon and Roberts (2015) find that a 1% increase in the aid for trade is associated with a 7.3-point rise in export diversification at the intensive margin and a 1.16-point rise in improvement of export quality. Lee and Ries (2016) find that a 10% increase in annual aid for trade from the five biggest bilateral donors (i.e., Japan, the US, France, Germany, and the United Kingdom) translates to 25 additional greenfield investment projects per year in the recipient countries.

Martuscelli and Winters (2014) conclude on the basis of a literature review that trade liberalization generally boosts income and thus reduces poverty, with gains for workers in the export sector and losses for those working in the import-competing sectors. De Melo and Wagner (2015) confirm these findings and show that aid for trade has also helped reduce poverty through other channels. For example, targeted aid to building productive capacities in agriculture and insurance schemes to remove risks can raise the productivity of households close to the poverty line. Road rehabilitation can also reduce the monopsonistic power of traders in remote areas, thereby raising the incomes of the poor selling agricultural products.

### **Case Stories Illustrate Successes**

The empirical findings are illustrated by the results reported in the 111 case stories, which the public and the private sector submitted in the context of the 2015 OECD/WTO monitoring exercise (Figure 19.4). The case stories about aid-for-trade priorities, policies, and programs mention 299 results in total. The most important ones are export market diversification (47 times), an increase in employment, including for women (45 and 27 times, respectively), and an increase in foreign and

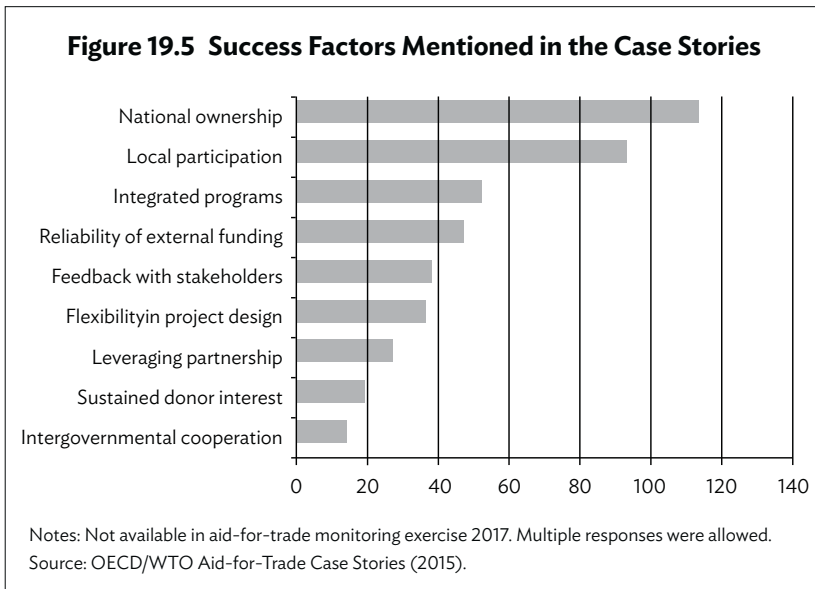


domestic investment (37 and 33 times, respectively). These results are followed by a rise in per capita income (25 times) and poverty reduction (18 times). The findings are rather similar to those reported in the 2011 monitoring exercise. However, any conclusion from the collection of case stories must be tempered by the awareness of its selection biases (Newfarmer 2014).

Critical aid-for-trade success factors mentioned in the case stories were country ownership at the highest political level and active local participation. Integrated approaches to development, for instance, by combining public and private investment with technical assistance, also increase the success rate. Equally, long-term donor commitment and adequate and reliable funding are considered essential. Other factors highlighted were leveraging partnerships including with providers of South-South cooperation and keeping project design flexible to facilitate adjustments in initial plans (Figure 19.5).

### 19.3 Aid for Trade and the SDGs

The international community has been struggling to reconcile the economy with nature and society. Gro Harlem Brundtland in her famous 1987 report, *Our Common Future*, called for governments to change their



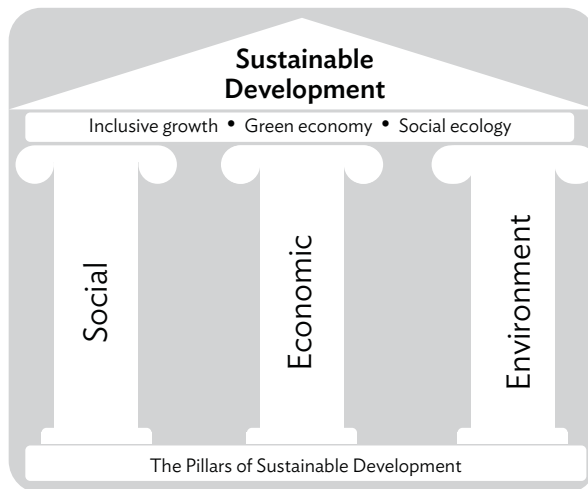
approach to economic growth. She set out the vision for a new era—growth that is forceful and at the same time socially and environmentally sustainable. Realizing this vision has proved elusive, but gradually the relevant policy signposts have been put in place. Analytical frameworks have been broadened to better assess the nexus between economic growth and inequality on the one hand (inclusive growth), and between environment and growth on the other (green growth) (OECD 2011c; World Bank 2012). This section largely deals with the contribution aid for trade can make to inclusive growth and green growth. Less progress has been made on the social–ecology nexus and further work is needed to better examine the distributional, employment, and skills implications of the transition to environmentally sustainable growth. It could be argued that environmental challenges are truly social problems that arise largely because of income and power inequalities (Laurent and Pochet 2015).

The Millennium Development Goals focused mostly on the social sectors. Less systematic attention was paid to economic growth, industrialization, and jobs as well as environmental sustainability and climate change. A key lesson of the Millennium Development Goals was that sustained change cannot be achieved through one-dimensional or single-sector goals. The SDGs with their broader focus require a

response that incorporates multidimensionality into policy design. This involves identifying trade-offs, complementarities, and unintended consequences of policy choices to improve and better target policy advice. Such integrated approaches to policy help address economic challenges in a more realistic and effective fashion. It privileges collaboration and coherence in addressing integrated problems, removing the compartmentalized approach that has limited aid and trade policies and their effectiveness. It also requires a more sophisticated policy design in which systemic spillovers can be beneficial as well as damaging. Consideration of these trade-offs is best undertaken at the national level where policy makers can optimize among different trade-offs. To make sense of sustainable development, it is necessary to think about the interrelationships between the different pillars (Figure 19.6).

The development community has long recognized that the vicious circle of underdevelopment linking high population growth, poverty, malnutrition, illiteracy, and environmental degradation can be broken only through policies that integrate the objectives of promoting sustainable economic growth; enabling broader stakeholder participation in the productive processes; a more equitable sharing of their benefits; and ensuring environmental sustainability (OECD

**Figure 19.6 The Pillars of Sustainable Development**



Source: Authors.

1989). Yet, integrated approaches are also challenging to execute, while experience with multi-sector programs have been mixed so far.

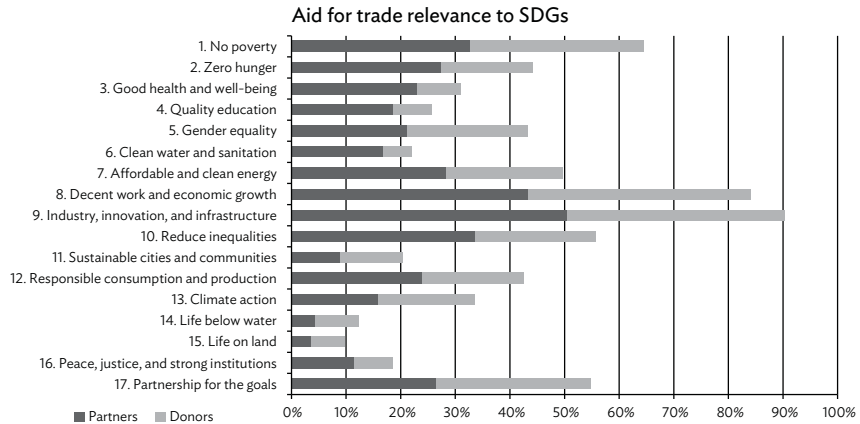
Implementing aid-for-trade projects and programs has required an integrated understanding of economic systems and their interaction with other systems that follow their own internal logic. A central debate over the last 10 years has been whether the focus of aid for trade should be narrow or broad. Many commentators have made the case that the definition of aid for trade was too broad and this diminished its effectiveness (Adhikari 2011). But the WTO Task Force recommendations and ongoing OECD/WTO monitoring process have continually linked aid for trade to a broader set of objectives including poverty reduction, green growth, and gender equality. In pursuit of the SDGs, this broader approach makes even more sense and aid for trade can and should contribute to multiple goals. In addition, there is mounting support for the idea that by strengthening the role that trade plays in development, aid for trade can help developing countries build capacities that in turn can contribute to a healthier environment and to fighting poverty. Unfortunately, donors and partner countries do not always prioritize these broader objectives.

The 2017 aid-for-trade monitoring exercise indicated that many partner countries, as well as donor countries, have high hopes that aid-for-trade can contribute to improving a country's capacity to achieve the SDGs. Expectations are particularly high regarding aid for trade's contribution to economic growth and poverty eradication through inclusive and sustainable development and financing for development. This confirms that countries themselves see trade as an effective enabler, or a means of implementation. Partner and donor countries both consider overwhelmingly (90% and 91%, respectively) that aid for trade contributes to SDG 9 (i.e. industry, innovation, and infrastructure). Their views on the SDG 8 (i.e., decent work and economic growth) differ somewhat with 78% of the partners and 92% of the donor countries considering aid for trade relevant. The same is true for SDG 1 (i.e., no poverty) with percentages of 59% and 72% or reducing inequalities with 60% and 50%, or zero hunger with 49% and 38%, respectively. More shared views are there on the contribution of aid for trade to affordable and clean energy, 51% and 48%, respectively (Figure 19.7).

### **19.3.1 Inclusive Growth**

As noted above, the bulk of aid for trade is committed to improving economic infrastructure and building productive capacity. Both play an important role in reducing trade and transport costs, improving

**Figure 19.7 Contribution of Aid for Trade to the Sustainable Development Goals**



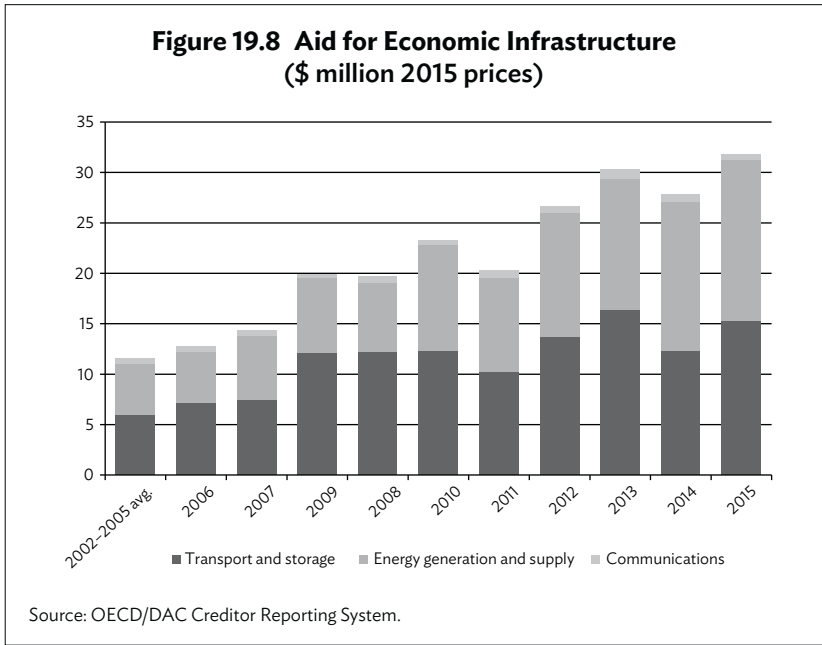
Source: OECD/WTO 2015 Aid-for-Trade monitoring exercise.

the business environment, and connecting local firms to regional and global value chains. There is now abundant evidence to suggest that aid for trade helps to boost economic growth and depending on the pace and pattern reduces poverty (SDG 1). The relationship between trade openness, growth, and poverty reduction is complicated, but there is little doubt that changes in trade, directly and indirectly, affect the welfare of households (Higgins and Prowse 2010). Aid for trade can be targeted to enhance inclusive growth.

### Economic Infrastructure

SDG 9 calls for resilient infrastructure, including regional and trans-border infrastructure to support economic development. Goal 9a is about facilitating sustainable and resilient infrastructure development in developing countries through enhanced financial, technological, and technical support to African countries, least developed countries, landlocked developing countries, and small island developing states. Annual commitments to transportation and storage averaged \$12 billion between 2006 and 2015 (Figure 19.8). This has contributed to the improvement of roads and rail. Buys, Deichmann, and Wheeler (2006) and Shepherd and Wilson (2008) have found that road improvements can have substantial positive effects on trade volumes. It also plays a





role in reducing poverty by connecting rural producers to markets, and improving access to health services and education.

A lack of electricity can dramatically affect production costs and reduce export competitiveness and, thus, trade performance. But the cost of unreliable electricity can be even greater. Unreliable electricity not only requires the purchase of generators, but can damage machinery and equipment used in production due to fluctuation in power intensities (Hallaert, Cavazos Cepeda, and Kang 2011). Several donors are involved in strengthening electrical transmission and build infrastructure for distribution from power sources to end users. Aid committed to the energy sector has expanded significantly from an average of \$5 billion between 2002 and 2005 to \$14 billion between 2012 and 2015. These efforts contribute to SDG Goal 7: Energy for All. This in turn can contribute to services delivery and better education outcomes.

It is also argued that aid can catalyze investment by crowding in the private sector. However empirical studies on the effect of aid on foreign investment indicate ambiguous relationships with inconsistent results. Harms and Lutz (2006) suggest that higher volumes of aid have no effect on private foreign investment. Conversely, Selaya and Sunesen (2008) show that aid invested in complementary inputs such as social

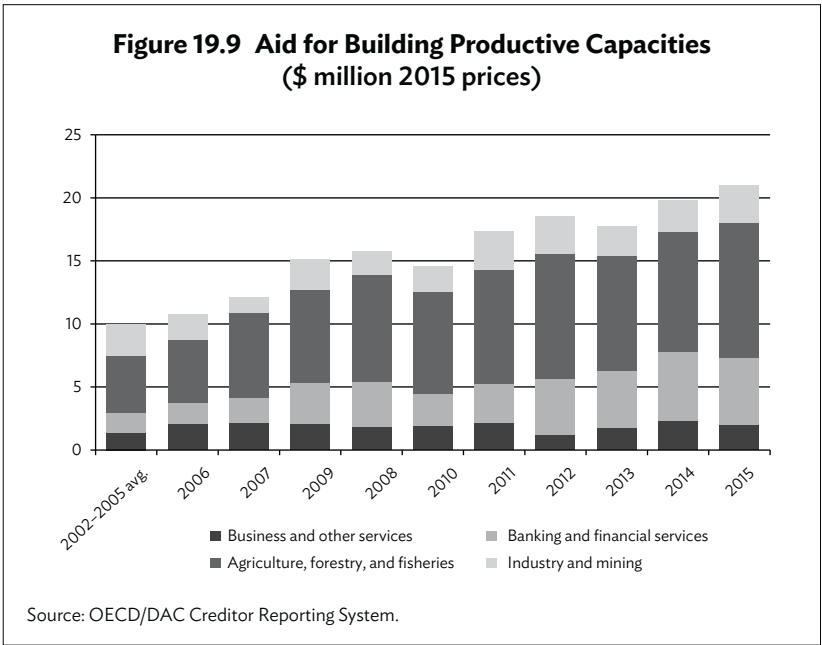
and economic infrastructure draws in foreign capital, while aid directly invested in physical capital crowds out private foreign investments. In addition, Eden and Kraay (2014) find that on average every dollar invested in public infrastructure in developing countries crowds in \$2 of private investment.

Development agencies have traditionally worked with developing countries to promote conditions for a dynamic private sector, strengthening the role of individual initiative, private enterprise, and the market system. Developing countries have an obligation to ensure that their economy is not stifled by overregulation, corruption, and powerful state and private monopolies. While countries claim they want to improve the conditions for investment, powerful colluding interests may prevent any reforms that threaten a privileged position or ulterior purpose. Also, while improvements can be politically difficult, they do not necessarily lead to an immediate investment reaction (Moss 2010). To help countries improve their business environment, development agencies support interventions using ODA funding which lower the costs of investment, reduce risks, improve competition, and develop capacity.

In practice, aid for the private sector encompasses many types of activities. Most bilateral and multilateral donors provide support to the enabling environment, but others go beyond this. White (2004) shows that donors mostly support the business environment, including macroeconomic strategies, governance issues, and policy, legal, and regulatory frameworks. Altenburg and von Drachenfels (2006) suggest that a range of complementary public policies is needed to create competitive sectors and overcome internal constraints, especially in small-scale economies. Some have argued that too much effort has been focused on achieving easily measured but low-impact regulatory reforms and too little on relieving important physical constraints such as a lack of infrastructure.<sup>1</sup>

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<sup>1</sup> The most common area of work among members of the Donor Committee on Enterprise Development (DCED) is in creating business-enabling environments, including a focus on infrastructure, improving the education and health of workers, and enhancing economic reform and governance. Small and medium-sized enterprise development is a cornerstone of more than two-thirds of DCED members. Others pursue trade and export issues, gender equity, and youth empowerment as well as public-private partnerships. Business engagement is the latest area of work for many members—donors engage the private sector to increase the level of development outcomes in private sector core goals and involve business in formulating the government's international development policy making.



### Building Productive Capacities

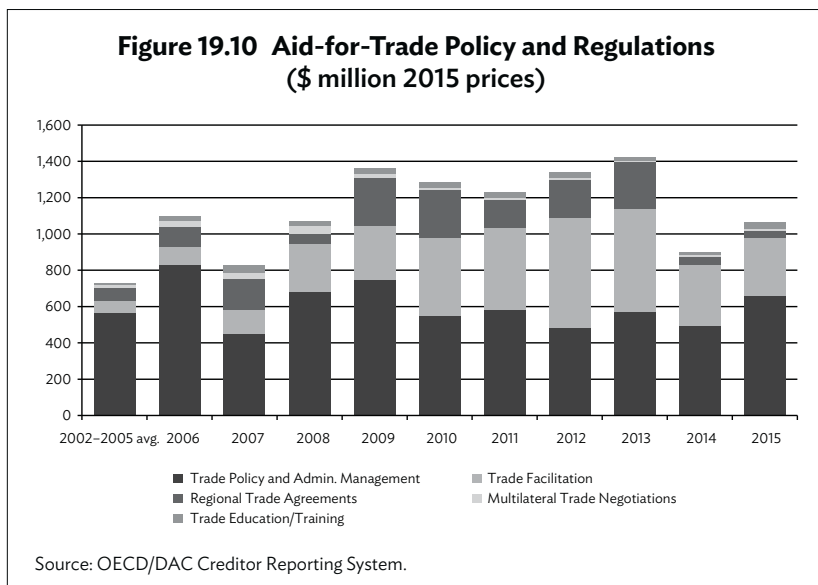
Agriculture remains a key economic activity for developing countries and a vibrant sector will help to make progress on SDG 2 to end hunger, achieve food security, and promote sustainable agriculture. Goal 2.4 aims to double agricultural productivity by 2030. This requires improvements in technology and management practices, expanded access to markets and credit, increased organizational and market efficiency, and restoration and protection of resiliency in production and livelihood systems. Aid for building productive capacities has been mostly targeted to agriculture with an average of \$8.8 billion per year between 2012 and 2015 (Figure 19.9). Aid for agricultural development improves productivity through investments that foster increasing returns to land, labor, and capital. A recurring feature of aid projects in agriculture is an emphasis on rural poverty and food security.

Strengthening the capacity of domestic financial institutions to encourage and expand access to banking, insurance, and financial services for all is the focus of SDG 8.10. For the private sector to grow, access to finance is essential. Aid for banking has increased by \$950 million between 2012 and 2015. This supports central banks, financial intermediaries, credit lines, microcredit, and credit cooperatives. In addition to credit,

a healthy business and investment environment requires trade and business associations, legal and regulatory reform, private sector institution capacity building and advice, trade information, and public-private sector networking at trade fairs. These business services received funding of \$1.9 billion in 2015, decreasing by 13% from 2014. The tourism sector has attracted less concessional resources but sustainable tourism creates jobs and promotes local cultures and products (Goal 8.9).

## Trade Capacity Building

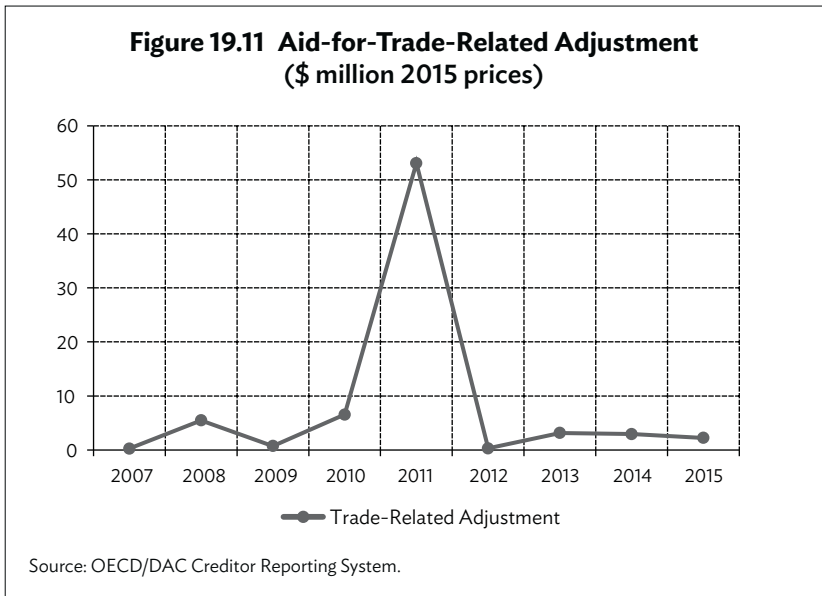
Goal 16.8 aims to broaden and strengthen the participation of developing countries in the institutions of global governance. Aid-for-trade policy and planning includes support to ministries and departments responsible for trade policy, trade-related legislation, and regulatory reforms, policy analysis, and implementation of multilateral trade agreements, e.g., technical barriers to trade and sanitary and phytosanitary measures. It also covers costs associated with mainstreaming trade in national development strategies. Flows for overall trade policy and regulations increased 18% from 2014 reaching \$1.1 billion in 2015 (Figure 19.10), while support for trade policy and management has stagnated, averaging just under \$600 million between 2010 and 2015. Support for multilateral negotiations is negligible and has declined but it could be useful to strengthen developing country involvement at the WTO.



Aid-for-trade facilitation covers support provided for the simplification and harmonization of international import and export procedures (e.g., customs valuation, licensing procedures, payments, and insurance), customs departments, and tariff reforms. After several years of expanding support for trade facilitation, flows declined in 2015 to \$320.3 million. Nevertheless, \$3.5 billion was committed between 2006 and 2015. Improving customs procedures can counteract smuggling and trade of illegal drugs. It also has positive health effects in that it reduces the incidence of sexually transmitted diseases in the vicinity of border crossings (Jouanjean, Gachassin, and te Velde 2016).

### Trade-Related Adjustment

Another way in which aid for trade could contribute to more inclusive growth is through trade-related adjustment. Aid-for-trade-related adjustment helps developing countries tackle the costs associated with trade liberalization, such as tariff reductions, preference erosion, or declining terms of trade. Aid for trade could mitigate and compensate for the adverse impacts of these trade changes, particularly when they affect poor people. At the time, there were hopes that an imminent conclusion of the Doha Round would increase the demand for aid-for-trade-related adjustment. Support peaked at \$53 million in 2011 and subsequently declined (Figure 19.11). The reform of the

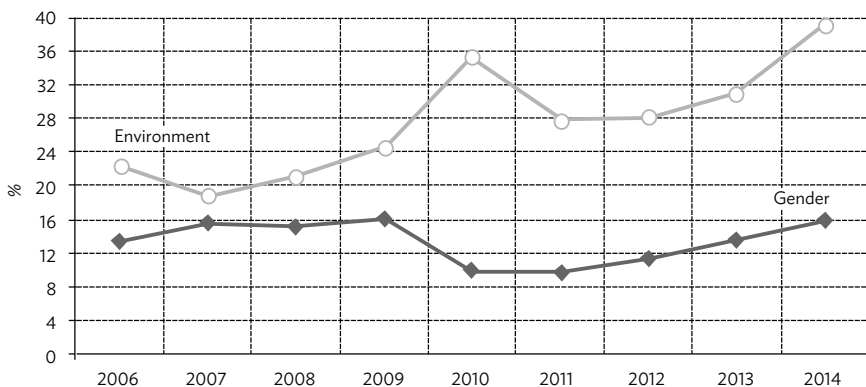


European Union (EU) Sugar Regime in 2006 involved a loss of quotas and gradual reductions in the price guaranteed by the EU. It forced EU Sugar Protocol countries to introduce measures to improve the competitiveness of their sugarcane sectors, and to mitigate the negative economic and social impact of the reform. Much of the reported flows were part of this initiative.

### 19.3.2 Gender Equality

Another important dimension of inclusive growth is gender equality. Gender is a relatively minor objective in aid-for-trade projects, amounting to 16% of flows in 2014 (Figure 19.12). Aid for trade can help advance gender equality (SDG 5) and empower women by expanding access to economic opportunities, particularly for sectors with a high share of women. It can also enable access to technology and information to promote the economic empowerment of women. In particular, reducing trade costs for small and medium-sized enterprises (SMEs) will contribute to making trade more inclusive as it may allow SMEs to expand employment and increase wages. Gender equality can benefit from this, given that many SMEs are owned by women and employ more women than men.

**Figure 19.12 Aid for Trade with a Gender or Environment Objective**  
(shares in total aid for trade)



Source: OECD/DAC Creditor Reporting System.

### 19.3.3 Green Growth

There have been long-running concerns that without major action irreparable damage would be done to the resource base and natural environment in developing countries. These problems could become increasingly intractable and expensive, compromising current and future development prospects. In developing countries, poverty is both a cause and result of environmental degradation. Integrating the economic and environmental pillars of sustainable development provides the basis for green growth. This approach involves wiring together economic, environmental, technological, financial, and development aspects into a coherent framework. This is key to achieving SDGs 13–15. Aid for trade contributes in various ways to Goal 13 on climate change by promoting low-carbon energy and transport infrastructure. Goal 14 on oceans is related to building productive capacity in sustainable fishing, while Goal 15 covers building capacities in sustainable forestry.

Experience suggests that green growth can open up new sources of growth through greater efficiency and productivity of natural resources, innovation, and new markets for green technologies, goods, and services. Climate change and policies taken to mitigate it will shift patterns of comparative advantage. These potential changes in trade patterns, including new opportunities arising from achieving low-carbon standards, present trading opportunities for developing countries. An integrated approach is needed to tackle climate change, energy sustainability, biodiversity loss, food security, and poverty alleviation.

Developing countries can shift to lower-carbon paths while promoting development and reducing poverty, but this depends on financial and technical assistance available domestically and especially from high-income countries (Stern 2009). A possible avenue to assist the transition to green growth is through aid-for-trade programs aimed at increasing the participation of poorer developing countries in international trade while at the same time strengthening environmental goods and services trade-related infrastructure and minimizing supply-side constraints (OECD 2012).

Trade is indispensable for accelerating the diffusion of green growth. Aid for trade will help ensure that trade plays this key role in transmitting new knowledge, technology, and behavior to developing countries. OECD ministers recognized the importance of aid for trade for achieving green growth with a declaration at the 2010 Ministerial Council Meeting that “in light of our shared interest in fostering sustainable and inclusive growth, we will pursue efforts to facilitate trade and investment in environmental goods and services and to promote effective Aid for Trade.”

Environmental objectives are central to a number of aid-for-trade projects and programs.<sup>2</sup> Typical examples of aid-for-trade projects with environmental objectives include infrastructure projects designed with comprehensive and integrated environmental protection and management components; activities promoting sustainable use of energy resources (power generation from renewable sources of energy); and energy conservation. Examples of aid for productive capacities include environmental projects such as sustainable management of agricultural land and water resources; sustainable forest management programs, combating land degradation and deforestation; sustainable management of sea resources; adoption and promotion of cleaner and more efficient technologies in production processes; measures to suppress or reduce pollution in land, water, and air (e.g., filters); increasing energy efficiency in industries; and sustainable use of sensitive environmental areas for tourism (OECD 2011c).

The proportion of aid for trade with an environmental objective, and thus contributing to the promotion of green growth has been trending upward over time. While it averaged just 20% in 2007, as of 2014, the level stands at almost 40% (Figure 19.12). Almost half of total aid for trade with an environment objective is in the form of support for renewable energy—wind, solar, biogas, etc. A significant amount is also reported under low-carbon transportation systems, i.e., mass urban transit and rail. Sustainable agriculture also attracts significant levels of support. Japan and Germany are the two largest donors and provided 55% of total aid for trade with an environmental dimension in 2014.

## 19.4 Means of Implementation: Finance for Development

The vision underpinning the 2030 Sustainable Development Agenda is broad and ambitious. It calls for an equally broad and ambitious financing strategy. The resources required are immense, as much as \$4.5 trillion per year according to some estimates (Sachs and Schmidt–Traub 2014). The first International Conference on Financing for Development, which took place in 2002 in Monterrey, Mexico, highlighted that trade in many cases is the single most important external source of development

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<sup>2</sup> Since 1998, the Development Assistance Committee (DAC) has monitored aid, targeting the objectives of the Rio Conventions through its Creditor Reporting System (CRS) using the so called “Rio markers.” Every aid activity reported to the CRS should be screened and marked as either (i) targeting the Conventions as a “principal objective” or a “significant objective,” or (ii) not targeting the objective.



finance (United Nations 2002). The Addis Ababa Action Agenda no longer emphasizes this role of trade as a source of finance. Instead, the Agenda highlights domestic resource mobilization and foreign direct investment as the main source for financing development. International trade is mainly referred to as an engine for inclusive economic growth and poverty reduction. The remainder of this section puts ODA and OOF in the context of other development finance flows and highlights its continued relevance, especially for low-income countries.

### **19.4.1 Official Development Assistance Remains Critical**

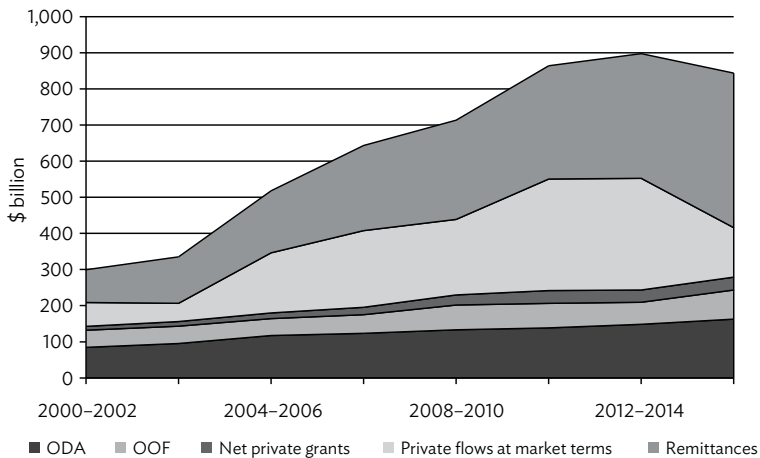
The Addis Ababa Action Agenda stresses the need for a significant additional development finance contribution from the private sector, although it also highlights the indispensable role of ODA in financing the SDGs. Until quite recently, ODA was the main external source of finance for development. Increasingly, it is being considered as only a part of the overall funding for development. That said, ODA, and other forms of official assistance continue to play a significant role in bolstering domestic development efforts in many countries. Used well, aid can generate large payoffs in terms of reducing poverty, meeting basic needs, and helping nations build human and institutional capacity.

While aid has eradicated diseases, prevented famines, and done many other good things, its effects on growth is often difficult to detect given the limited and noisy data that is available. Arndt, Jones, and Tarp (2010) found that it was reasonable to assume that aid worth 1% of a country's gross domestic product raised economic growth by 0.1% a year on average during the period 1970–2000. That is a small, but helpful impact. Clemens et al. (2012) found that aid causes some degree of growth in recipient countries, although the magnitude of this relationship is modest, varies greatly across recipients, and diminishes at high levels of aid.

Since 2000, ODA levels have doubled in real terms, but remain well below the long-established United Nations target for developed countries of providing 0.7% of gross national income in ODA—averaging about 0.3% in 2014. At nearly \$162 billion in 2015, ODA represented only 19.2% of all official and private flows from the 29 member countries of the OECD's Development Assistance Committee (DAC) and the international financial institutions. In addition, developing countries received \$80.6 billion in “other official flows” provided by public bodies at close to market terms. Private finance at market terms to \$137 billion and private grants reached \$35.6 billion. Remittances stood at \$427.7 billion (Figure 19.13).

Aggregate flows should be examined with care. The extraordinary period of expanding private inflows may not reflect future trends

**Figure 19.13 Flows to Developing Country by Development Assistance Committee Members and Multilateral Agencies (2015 constant, \$ billion)**



ODA = official development assistance, OOF = other official flows, DAC = (OECD's) Development Assistance Committee.

Source: OECD-DAC-CRS aid activity database and the World Bank World Development Indicators.

and there are a number of reasons to believe that such flows were the result of temporary circumstances. Developing countries are going to be facing a much tougher global environment moving forward. The commodity super-cycle that saw huge inward investment and windfalls for resource-exporting countries is coming to an end as demand from the People's Republic of China slows. The post-crisis response and exceptional measures taken by OECD countries including prolonged low interest rates and unconventional monetary policy distorted the development finance landscape. It sparked a search for yield in emerging and developing countries leading to overinvestment in these countries (as well as asset-price bubbles) and underinvestment in OECD countries (OECD 2015). As international interest rates normalize, capital that had flowed to developing countries is returning back to developed countries as conditions there improve. For instance, in 2015 private flows to developing countries at market prices dropped almost 60% compared with 2014.

Southern providers of development cooperation are also increasingly important global players (Table 19.1). The People's Republic of China is now a major source of development assistance, particularly

**Table 19.1 Estimates of Concessional Finance for Development (Official Development Assistance-Like Flows) of Key Providers of Development Cooperation that Do Not Report to the Creditor Reporting System (gross disbursements, \$ million)**

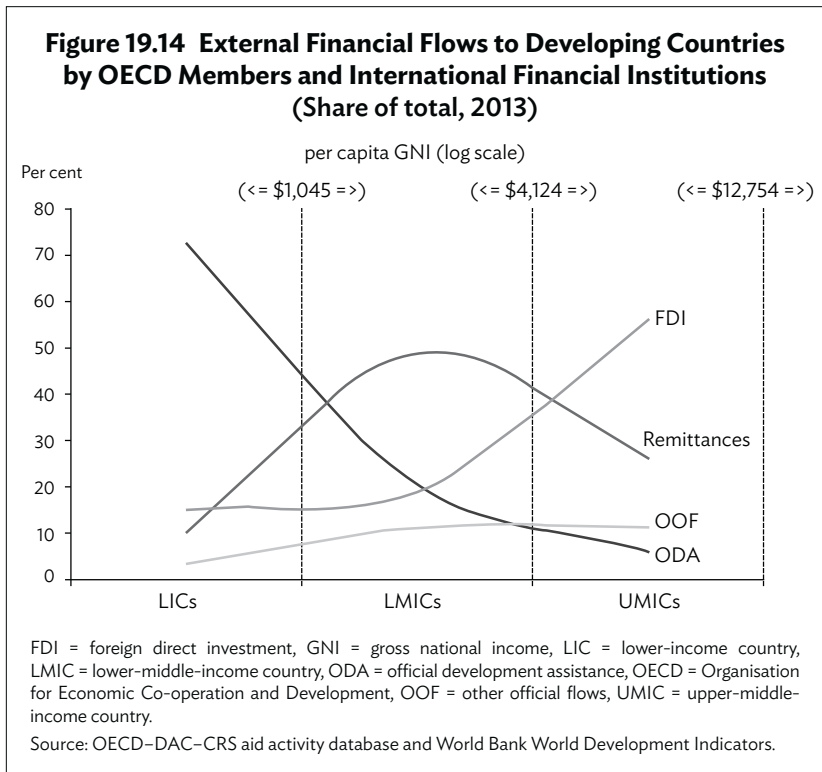
Country	2010	2011	2012	2013	2014	Source
Brazil <sup>1</sup>	500	NA	NA	NA	NA	Institute of Applied Economic Research and Brazilian Cooperation Agency
Chile	16	24	38	44	49	Ministry of Finance
PRC	2,564	2,785	3,123	2,997	3,401	Fiscal Yearbook, Ministry of Finance
Colombia	15	22	27	42	45	Strategic institutional plans, Presidential Agency of International Cooperation
Costa Rica	NA	NA	NA	21	24	Annual Budget Laws
India <sup>2</sup>	708	794	1,077	1,223	1,398	Annual Reports, Ministry of Foreign Affairs
Indonesia	10	16	26	49	56	Ministry of National Development Planning
Mexico	NA	99	203	529	NA	Mexican Agency for International Development Cooperation
Qatar	334	733	543	1,344	NA	Foreign Aid reports, Ministry of Foreign Affairs
South Africa <sup>2</sup>	154	229	191	191	148	Estimates of Public Expenditures, National Treasury

CRS = Creditor Reporting System, NA = not available, ODA = official development assistance, PRC = People's Republic of China.

Notes:

- (i) Data includes only development-related contributions. This means local resources, financing from a country through multilateral organizations earmarked to programs within that same country, are excluded. Moreover, as for reporting countries, coefficients are applied to core contributions to multilateral organizations that do not exclusively work in countries eligible for receiving ODA. These coefficients reflect the developmental part of the multilateral organizations' activities.
- (ii) The part channeled through multilateral organizations is (partly) based on websites of multilateral organizations, [www.aidflows.org](http://www.aidflows.org) and data from United Nations Department of Economic and Social Affairs (DESA) except for Brazil and India.

Brazil's development cooperation is significantly higher according to the official figures published by the Brazilian government. The OECD uses these data but, for the purposes of this analysis, only includes in its estimates (1) activities in low and middle-income countries; and (2) contributions to multilateral agencies whose main aim is promoting economic development and welfare of developing countries (or a percentage of these contributions when a multilateral agency does not work exclusively on developmental activities in developing countries). The OECD also excludes bilateral peacekeeping activities. Brazil's official data may exclude some activities that would be included as development cooperation in DAC statistics, and so are also excluded from the OECD estimates that are based on Brazil's own data.



in Africa. In addition, the People's Republic of China accounts for 20% of all foreign direct investment in developing countries. India is also becoming increasingly active, especially in neighboring countries and in Africa. Based on their own experience, Brazil and Mexico assist Latin American neighbors.

The distribution of ODA is very different from other financial flows. Also, ODA performs very different functions from other financial flows. Given its unique mandate to directly target development, improve welfare, and reduce poverty, ODA remains essential in supporting many countries, especially the poorest with little access to private finance and low levels of domestic resources. For almost three-quarters of countries with government spending of less than \$500 per person, ODA is the largest international resource flow they receive (Figure 19.14).

While the relative importance of ODA compared with private investments is decreasing in the lower-middle-income countries (LMICs) and upper-middle-income countries (UMICs), it can still contribute to

their development through mobilizing private flows, leveraging private investment, and facilitating trade. For instance, market failures or even missing markets might impede linking-up the large pools of savings in developed countries and the opportunities for high-return investments in developing countries. Obstacles include, among others, the absence of bankable projects and the lack of capacity among institutional investors. Multilateral development banks and national development finance institutions can address these market failures through targeted financial interventions, thereby leveraging substantially larger amounts of private financing participation (OECD 2016).

However, the development merits of such “blended financing” will depend on the specific transactions and projects being developed. Moreover, the rhetoric around “blended finance” may be misleading. The development community has coalesced around the objective of “turning billions into trillions.” But that is an argument about what is desirable, not about what is possible. If it costs as much to catalyze private finance as to provide the equivalent public finance, it does not help to close the financing gap (Carter 2015). Also, blended finance runs the risk of returning to the ineffective practice of tying aid money to procurement from the donor country

Donor support for private investment has come in for criticism, and policy makers seeking to maximize the role that private finance can play in development must recognize its limitations. In developing countries, the private sector is dominated by micro, small, and medium-sized enterprises; yet they find it particularly difficult to access external private financing sources. Close to 80% operate in the informal economy, which not only reduces the government’s tax base and can impact decent working practices, but is also a major obstacle for both enterprises’ and workers’ access to finance, insurance, social safety nets, and formal commercial opportunities.

## 19.5 Partnerships: Engaging the Private Sector

Private sector development has long been considered a key component for promoting economic growth and reducing poverty. The renewed emphasis on the private sector in development is in fact not new at all, but a return to earlier development approaches. The dominant interpretation of development has always revolved around economic well-being and economic growth. What has changed is the role of the state vis-à-vis the market and non-state actors. Despite periods with more attention for the role of the state, basic needs, redistribution, social service provision, or good governance, the undercurrent of

international development approaches have continuously favored the market, with economic growth, trade, and financial liberation presented as the main pathways to development (Kindornay and Reilly-King 2013).

Using aid to support private sector development though has a mixed record. Schulpen and Gibbon (2002) critically reviewed private sector development policies, arguing that they were shaped mostly by the nature and interests of the private sector in donor countries themselves, incorporated a high proportion of tied aid, and failed basic tests of coherence. Moss (2010) claims that donor attempts to address the investment constraints that hinder private sector growth, while constructive and positive, have been inefficient and sometimes haphazardly deployed. The lack of selectivity, prioritization, or strategic focus has hampered the effectiveness of aid.

The United Kingdom's Independent Commission for Aid Impact Assessment of the Department for International Development's private sector work identified failures to develop a realistic, well-balanced, and joined-up country-level portfolio of programs. A major constraint for donors is that objectives essential for private sector development, including regulatory reform and relaxation of international trade rules, lies not only outside its control but also outside its core competencies as an aid agency (ICAI 2014). More recent reviews are more positive. For example, a European Union (EU) evaluation of private sector development programs found that while there is broad consensus on the importance of private sector development for job creation, linkages between EU support for private sector development and employment generation have remained very distant (EC 2013). The evaluation also found that the EU has made valuable contributions to the development of the private sector in middle-income countries, notably through policy dialogue, alignment, and the clarity of the EU's role in private sector development.

Current opinions, however, transcend the traditional approach to development. In this view, the private sector is an actor that could and should be directly involved in addressing development challenges. Although already noticeable at earlier occasions, the role of the private sector was stressed at the 2011 High Level Forum on Aid Effectiveness in Busan. Participants recognized the private sector as a key partner and on equal footing with all other development actors. They agreed to "enable the participation of the private sector in the design and implementation of development policies and strategies to foster sustainable growth and poverty reduction" (OECD 2011a: 10).

What could be considered new is the underlying multi-actor approach. In the face of complex, cross-border, cross-issue problems, the importance

of cooperation between societal sectors has gained recognition. The awareness has grown that not only governments but all societal actors will need to play their part in addressing development challenges. This multi-actor approach to confronting 21st century development challenges has been accompanied by the redefinition of the role and nature of business and is mirrored in the increased attention to the active role of firms in development. It may not be about state or business or civil society, but about state and business and civil society. Attributing enterprises an active role, and therefore responsibility, as key actors in development, is central in the current “private turn” (Vaes and Huyse 2015).

With a growing number of companies looking to the developing world for new markets, the private sector has a profound interest in trade-related infrastructure, an educated workforce, and quality standards for inputs to their goods. Companies are embracing the concept of “inclusive growth” and they realize that it is in their core business development interests to build capacity in their target markets. International companies contribute more and more to building trade capacities in developing countries. Increasing connectivity and the fluidity of trade and investment along supply chains, thereby promoting transfers of capital, knowledge, and skills, socioeconomic upgrading will stimulate trade. Thus, the time is ripe for exploring new partnerships between the public and private sector (OECD/WTO 2015).

The pivotal role of the private sector has always been recognized in the Aid for Trade Initiative and considerable progress has already been made. A new generation of programs is emerging, involving donors, partner countries, and private firms both in developing and donor countries. Some of these programs focus on human capacity building. Insofar as the workforce is deficient in specific skills, foreign companies often establish training programs. While benefiting the company in the short run, such programs can contribute to sustainable long-term benefits and country-wide spillover effects for the country. Other programs are focused on transfers of technology, know-how, and efforts to improve the business environment such as through providing access to finance for suppliers. While benefiting the instigating company, the efforts to improve the business environment can be expected to have positive spillover effects, including to local SMEs (World Bank 2011).

An important conduit for capacity building is the incorporation of local companies into regional or global value chains. This can span any link in the chain, ranging from design to production, assembly, packaging, marketing, and distribution to consumption. In most cases, SMEs in developing countries are establishing links to global value chains that are involved in the agribusiness industry. Assistance in meeting quality and safety standards is important to help incorporate

local producers. Promoting the inclusion of small producers into global value chains is fundamental to fighting poverty: 75% of the world's poor live in rural areas and of these, 86% depend on agriculture. If small-scale producers are able to link to the chain while at the same time obtaining assistance to help with needed certification for products (e.g., organic production), they will be able to take much better advantage of market access opportunities (OECD/WTO 2013).

Trade facilitation is a major concern for the private sector as red tape and inefficiencies in border management and corridor performance can raise transport costs substantially. Initiatives and projects led by firms and industry groups range from road safety initiatives in Africa to more efficient customs processes through customized software development in Africa, Asia, and Latin America. With the 2013 WTO Agreement on Trade Facilitation, this area has become a focal point of public-private cooperation. For instance, Canada, Germany, the United States, and the United Kingdom sponsor the efforts of the Centre for International Private Enterprise, the International Chamber of Commerce, and the World Economic Forum who have joined forces to launch the Global Alliance for Trade Facilitation.

The results of these programs have been judged as largely positive: they have helped firms develop new products, increase their exports, and save costs. In addition, the results are aligned with the objectives of the development community, such as improved workers' skills, better working conditions, improved health among workers, job creation, poverty alleviation, and improved environmental performance. Consumers have also benefited from lower prices. The main drivers of the engagement are company-based and relate to firms' core business strategies, while the corporate social responsibility agenda of firms also explains their actions in this area (OECD/WTO 2015).

Strengthening private sector engagement further could be achieved by creating shared multi-stakeholder value and building platforms for project-based collaboration.<sup>3</sup> Such reinforced partnerships could be

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<sup>3</sup> Innovative financing involves nontraditional development approaches such as public-private partnerships, and catalytic mechanisms that (i) support fund-raising by tapping new sources and engaging investors beyond the financial dimension of transactions, as partners and stakeholders in development; or (ii) deliver financial solutions to development problems on the ground. In general, the use of concessional funds to mobilize private investment has to be carefully considered. Doing so should not damage sustainable local capital markets or undermine market-determined private flows. Among the various approaches, there is an interest in how to develop ODA-backed public-private partnerships that can encourage investment, not least in the infrastructure sector. Public-private partnerships hold much promise as a means of bringing together public and private—as well as local and international—resources and expertise, but much is required from all involved to realize their potential (OECD 2006b).



forged by scaling up and systematically including the private sector in the four different stages of the aid-for-trade project life cycle. In the first place, the views of the private sector could be solicited to provide information about obstacles to be removed or incentives to be improved. Second, the private sector could share best practices they have observed from other aid-for-trade programs or from programs they have implemented themselves. Third, governments, donors, and private companies could join forces to scale up their actions and maximize the impact. And finally, the private sector could provide evidence of success or failure.

Expanding the partnership with the private sector should respect international agreements that discipline the potential distortion of trade flows with aid money. Thus, involving the private sector in donor programs should not reintroduce the bad practice of tying aid to donor companies. The OECD Arrangement on Officially Supported Export Credits offers an extensive framework for the orderly use of officially supported export credits, while the 2001 DAC Recommendation unties ODA to the least developed countries and heavily indebted poor countries. Furthermore, the WTO Agreement on Subsidies and Countervailing Measures contains binding disciplines for the use of subsidies.

## 19.6 Ensuring Accountability

The United Nations report on the follow-up and review of the 2030 Agenda for Sustainable Development calls for a voluntary, effective, participatory, transparent, and integrated monitoring framework. The report encourages member states to conduct reviews of progress at the national and subnational levels. These national reviews should be country-led and country-driven and provide incentives for helping to translate the Agenda into a nationally owned vision with clear objectives and geared toward accelerating implementation. The reviews should also aim to enable mutual learning across countries and regions and help all countries to enhance their national policies and institutional frameworks. Finally, it should mobilize necessary support and partnerships for the implementation of the SDGs. The report argues that the value of a unified and universal approach to such reviews can be found in the WTO Trade Policy Review Mechanisms (United Nations 2016).

In addition, an annual high-level Political Forum on Sustainable Development will be tasked with “assessing progress, achievements

and challenges faced by developed and developing countries” and ensuring “that the Agenda remains relevant and ambitious.” The annual meetings of the high-level political forum, held under the auspices of the Economic and Social Council, should pave the way for its quadrennial meeting under the auspices of the General Assembly. The WTO in collaboration with the OECD has created a similar review framework to track progress in implementing the Aid for Trade Initiative. The next section will draw some lessons learned.

### **19.6.1 Shining a Spotlight**

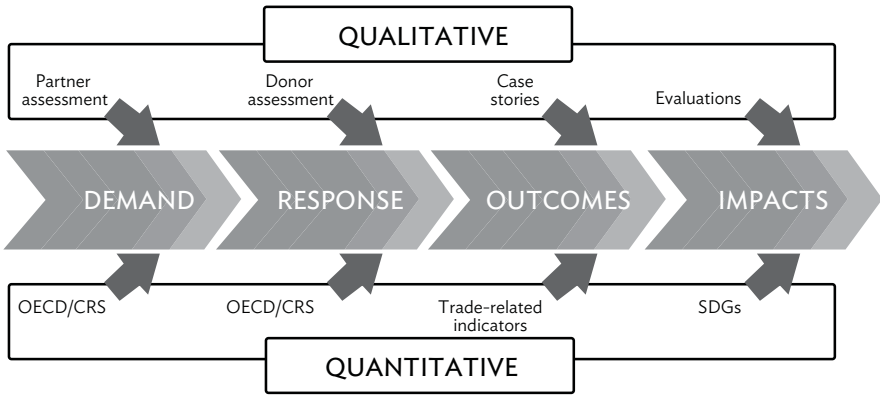
The OECD/WTO monitoring framework consists of three accountability mechanisms with different but complementary objectives. At the local level the framework aims at fostering local ownership and ensuring that trade-related needs are prioritized in national development strategies and adequately funded by the donor community. At the regional level the objective is to focus attention on regional trade-related constraints and galvanize collective action to tackle them. Finally, at the global level the Initiative provides a spotlight on what is happening at the local and regional levels, what is not, and where improvements are needed.

The monitoring exercise collects qualitative and quantitative information from a number of different sources such as self-assessments from developing and developed countries and international financial institutions, statistical data on aid-for-trade proxies extracted from the OECD Creditor Reporting System (CRS), and country profiles that show links between development finance inputs and trade and development results. This information is buttressed by case stories on aid-for-trade programs, research from international governmental organizations and nongovernment organizations, findings from independent evaluations, and academic research (Figure 19.15).

### **19.6.2 A Trade and Development Results Framework**

A number of efforts have been made to move the aid-for-trade results agenda forward. The OECD provided a comprehensive overview of existing evaluation approaches, methods, and processes and proposed a menu of trade-related indicators (OECD 2011b, 2013b). In addition, a number of attempts have been made in the literature to develop indicators for monitoring trade capacity, trade performance, and aid-for-trade results. The International Finance Corporation (IFC, The World Bank Group) Doing Business Project has played a major role in promoting the

**Figure 19.15 Aid-for-Trade Monitoring Framework**

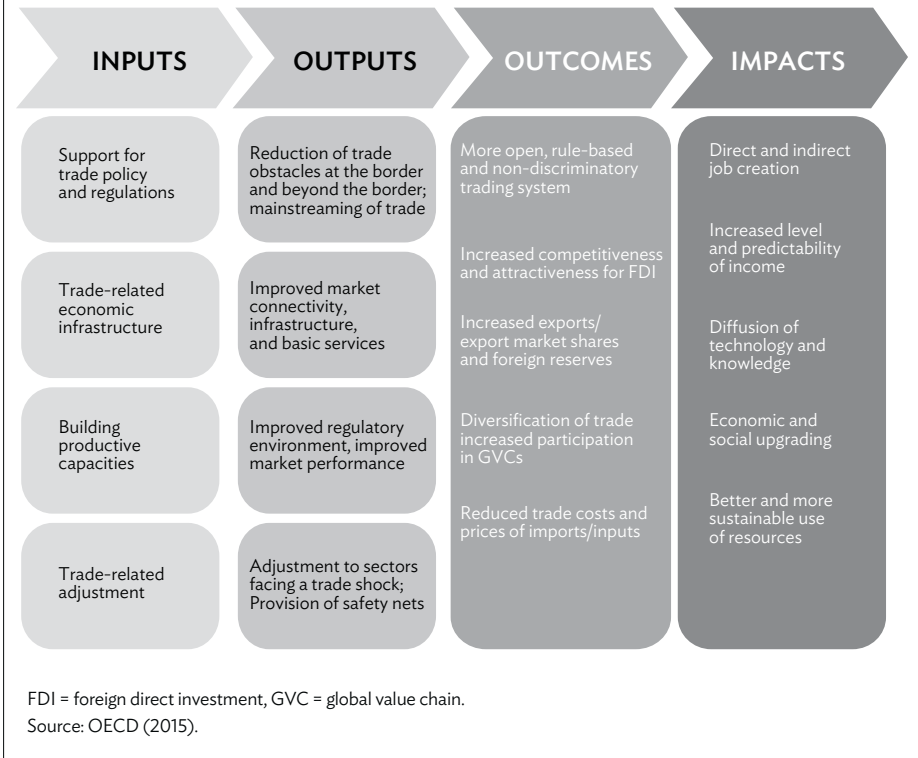


CRS = Creditor Reporting System, OECD = Organisation for Economic Co-operation and Development, SDG = Sustainable Development Goal.

Source: Authors.

culture of results by monitoring selected indicators and benchmarking countries against each other. In addition, Doing Business contains a Trading Across Borders indicators series that specifically measures a country’s trade facilitation capabilities. The OECD’s trade facilitation indicators measure a country’s trade facilitation capabilities that identify areas for action and enable the potential impact of reforms to be assessed. Estimates based on the indicators provide a basis for governments to prioritize trade facilitation actions and mobilize technical assistance and capacity-building efforts for developing countries in a more targeted way (OECD 2015). The aim is to compare a country’s performance on the basis of selected indicators allowing for country group benchmarking. The results chain framework describes the causal sequence of development interventions based on four main elements: (i) inputs and activities, (ii) direct outputs, which in turn lead to (iii) intermediate outcomes that contribute to (iv) long-term impacts (Figure 19.16).

Subsequent initiatives have attempted to provide a more or less comprehensive list of trade-related indicators, sometimes aggregated in synthetic indexes and country fact sheets or global rankings. These have included the World Trade Indicators collected by the World Bank Institute, which contains a broad set (about 500 variables) of trade policy and outcome indicators for 211 countries and territories, and the World Economic Forum (WEF) Global Competitiveness and

**Figure 19.16 Aid-for-Trade Results Framework**

Enabling Trade indexes, which contain over 100 indicators (based on available statistics and on surveys) of relevance to trade, supply chain management, and competitiveness issues. Some more specific indexes have also been developed, for example, by the World Bank in the field of logistics (Logistics Performance Index, LPI).

### 19.6.3 Accountability at the Local Level

The aid-for-trade country profiles transpose the idea behind project-based analytical tool to the macro level and allow for tracing a possible sequence of aid-for-trade interventions to achieve trade and development objectives.<sup>4</sup> The country profiles therefore present indicators in four

<sup>4</sup> Information on aid-for-trade country profiles can be found at <http://www.oecd.org/aidfortrade/countryprofiles/>

sections: Development Finance, Trade Costs, Trade Performance, and Development Indicators. The country profiles do not posit a causal link; they do not attempt to test or estimate the causal impact of aid on trade at the macro level. Instead, they give a dynamic perspective on development of a specific country. In this sense, the sequence traced is one of contribution, not attribution. Where such contribution can be discerned, the country profiles provide ground for further in-depth, country-based discussion fueled by further research. In this sense, the country profiles contribute to a greater understanding of the important role that aid-for-trade flows play in a country's achievement of the trade and development objectives targeted by these flows. This could also provide a model for the SDG country discussions.

The Task Force on Aid for Trade recommended that an “assessment of Aid for Trade—either as a donor or as a recipient—should be included in the WTO Trade Policy Reviews.” This was reinforced by the agreement at the December 2006 General Council that a general assessment of aid for trade should be included in future trade policy reviews. The 2010–2011 WTO aid-for-trade work program sought to operationalize these recommendations through “systematically integrat[ing] an analysis of national aid-for-trade strategies and experience as part of the Trade Policy Review (TPR) process.” It was further agreed that there would be a series of pilot TPRs and that based on their further consideration would be given to “including an aid-for-trade analysis in future TPRs.”

Six pilot TPRs were completed and the process was welcomed by WTO members, especially by developing countries who considered that an inclusion of aid for trade brought additional value to the TPR process. It was also clear that the process led to additional internal coordination on aid-for-trade issues. However, the failure to put in place a more systemic follow-up mechanism where the country under review and its development partners can have a dedicated focus on aid for trade undermined the full integration of aid for trade in the Trade Policy Review Mechanism. Since 2012, aid-for-trade sections are no longer included in the Trade Policy Review Mechanism.

This absence of national aid-for-trade discussions points to a more general problem that may also manifest itself with the SDGs. The aid-for-trade discussion is well established at the global level in particular at headquarters of regional economic communities and in intergovernmental organizations. At the country level, both in OECD capitals and in donor–recipient discussions, the focus of the debate is still very much sectoral, such as for instance on infrastructure, or rural development, or private sector development. Only in cases where countries focus their development strategies explicitly on improving trade performance does aid for trade resonate at the country level and

among stakeholders beyond the government agencies that are directly involved. Given country heterogeneity, not all countries should prioritize improving trade performance. In some countries a focus on governance or social sectors might be more appropriate.

The SDGs acknowledge that different countries have different priorities at different stages of development and should set their own development trajectory with their own targets and performance indicators. Introducing such management systems more broadly requires considerable investments in human and institutional capacity building. Once these investments have been made, these management systems do provide powerful tools to ensure that aid and development finance does contribute to meeting the ambitious development objectives. As stressed in the Paris Declaration on Aid Effectiveness and outcome documents of subsequent high-level meetings such as in Accra and Busan, the ultimate objective is to ensure that aid and other forms of development finance are fully integrated in national schemes. More specifically, country-based approaches will increase transparency and objectivity of decision making, promote alignment of donors with partner country's sustainable development objectives and targets, reduce parallel results reporting processes, increase mutual accountability, and allow for country comparisons. This works best in countries where the political leaders work cohesively toward common objectives and it requires internal consensus on policy objectives and leadership through multiple levels of public administration and feedback mechanism (OECD 2013).

## 19.7 Conclusions

The Millennium Development Goals showed that sustained improvements are unachievable through one-dimensional or silo approaches. The SDG with their comprehensive scope and universal coverage require a response that incorporates multidimensionality into policy design. The aid community has long recognized that the vicious circle of underdevelopment can only be broken through policies that integrate the objectives and requirements of promoting sustainable economic growth, enabling broader participation of all the people in the productive processes and a more equitable sharing of their benefits and ensuring environmental sustainability.

This involves identifying trade-offs, complementarities, and unintended consequences of policy choices to improve and better target policies. Such integrated approaches should help to address economic, social, and environmental challenges in a more realistic and effective manner. Moreover, it should privilege collaboration and coherence in

addressing integrated problems, removing the compartmentalized approach that has limited the effectiveness of policies. Finally, it requires a more sophisticated policy, which systemic spillovers can be beneficial as well as damaging.

The SDGs and aid for trade are both dependent on integrated policy approaches and trade-offs. This implies that aid for trade should contribute to economic objectives of developing countries by helping them connect their firms to international markets, expand trade, and strengthen its contribution to inclusive economic growth; to social objectives by reducing poverty and inequalities; and to environmental objectives by preserving the environment and adapting to climate change while exploiting comparative advantages in low-carbon production and environmental goods and services. In addition, aid for trade can help developing countries build resilience and adjust to shocks that ripple through international markets.

Implementing effective aid-for-trade projects and programs has always required an integrated understanding of economic systems and their interaction with other systems that follow their own logic. Such a holistic approach has been the essence of the success of the Aid for Trade Initiative, together with its flexibility to adapt to changes in the trade and development landscape and its inclusive partnerships with different donor communities, the private sector, and civil society.

The 2030 Agenda for Sustainable Development calls to “increase aid-for-trade support for developing countries, in particular least developed.” This echoes a similar appeal in the Addis Ababa Action Agenda. The Tenth WTO Ministerial Conference in Nairobi also highlighted the need for continuing the Aid for Trade Initiative. It is clear that international trade can help realize the SDGs as a key transmitter of goods and services, technology, knowledge, and behavior. High trade costs, however, continue to inhibit many developing countries from fully exploiting their trade and development potential. In particular, landlocked and small and vulnerable economies (notably geographically remote island economies) face inherent challenges in this regard. Consideration of trade-offs is best undertaken at the national level where policy makers can optimize among different conflicting demands. National discussion about comprehensive challenges among different policy communities and stakeholders prove to be difficult if there is no strong political leadership and national engagement. The challenge to agree on local trade-related goals and indicators appears to be less daunting than in some other areas such as those related to people and planet.

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# 20

## Conclusion: Directions for Future Research and Policy Making

*Matthias Helble and Ben Shepherd*

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### **20.1 What is the Role of Trade in Promoting Sustainable Development?**

The chapters in this book have shown that trade has been, and continues to be, one of many economic mechanisms that can promote sustainable development. But the various contributions have also emphasized that, in many cases, the links are not unidirectional or unconditional. Instead, many factors come into play in mediating the relationship between trade and sustainable development. It is therefore important to accommodate a wide range of policy areas when designing trade policies that can support broader development objectives.

Although clear-cut cases where traditional trade policies have sustainable development implications are relatively few, it is worth signaling one important, but relatively under-examined, mechanism. Tariffs and nontariff measures affect the relative prices of goods in consumption, which can have direct development implications. Some groups in society—the poor, women, or other marginalized groups—may consume differently from dominant groups. The political economy of protection means that trade measures might increase the relative prices of goods that account for a higher proportion of marginalized people's consumption basket, thereby disadvantaging them in a direct and ongoing way. The precise extent to which this is happening in particular countries is an empirical question. Techniques exist to examine it, combining information on trade policy with detailed household surveys. For instance, Nicita et al. (2014) show that trade policy in sub-Saharan Africa tends to redistribute income from rich to poor households, thus

constituting some hallmarks of a “pro-poor” trade policy. There is scope to repeat that analysis for other regions, as the result depends on precise consumption and production patterns, in addition to applied trade policies. The same methodology could also be applied to better understanding a dynamic discussed in the chapter by Shepherd and Stone, namely the gender implications of trade policy. Since household surveys distinguish female-led from male-led households, conducting a similar analysis would enable seeing the extent to which applied trade policies are “pro-women.”

Another case of traditional trade policies having direct developmental effects relates to what might be termed “development products,” like medicines, vaccines, medical supplies, and treated bed nets. Although relief operations are typically exempted from tariffs, countries in nonemergency situations, but where development needs are serious, often subject these products to a range of tariffs and nontariff measures. The combined effect is to increase prices and decrease availability. Clearly, that is highly undesirable with respect to sustainable development. In this case, trade has a clear role to play in bringing poor people key products for treatment and prevention of common sicknesses at the lowest possible cost. In another area, there have been efforts to liberalize trade in “environmental goods and services” as a priority, i.e., without waiting for liberalization of other sectors. These efforts became stalled in the World Trade Organization (WTO), but the Asia-Pacific Economic Cooperation (APEC) successfully established a product list among its member economies, and work is ongoing to free up trade in these products. The global commitment to sustainable development suggests that countries should also agree on a list of development products for priority liberalization. The list needs not be comprehensive or cover all aspects of development, but the case for applying it to medical and health-related products is overwhelming. Of course, just making these goods available at the lowest possible cost does not make up for a dysfunctional or understaffed health system. But even when such difficulties are in evidence, there is simply no development-based argument for making medicines, vaccines, and other health products more expensive than they need to be—yet that is what activist trade policy in this area does.

Countries do not need to wait for a regional or plurilateral initiative to lower their tariffs on health products. Reducing tariffs unilaterally is the most effective and direct tool to bring down health product costs. Countries need to ensure, however, that the lower tariffs translate into lower prices. In most countries, the procurement of medicines and other health products is complex, involving various public and private actors. The final price paid by the health care facility or the patient

might differ considerably from the imported price. Reducing tariffs and other nontariff barriers is the first step to bring prices down. However, a careful examination of the entire supply chain behind the border is typically needed to ensure that health products are sold at the lowest, yet market-based price.

A similar logic for reducing trade barriers to improve health outcomes applies to trade in services. Adequate access to education and health services will be a backbone for achieving the Sustainable Development Goals (SDGs). However, most countries remain highly reluctant in opening both sectors, despite the considerable benefits. One difference with respect to goods trade is that increased trade in health services is not unconditionally positive. The chapter by Rupa Chanda highlights how, due to most countries' chronic shortage of health care workers, the increased export of services might negatively impact equity and access. For example, liberalizing health care services trade under mode 2 (allowing foreign patients to purchase medical treatment at home) can generate foreign exchange earnings and new employment opportunities. At the same time, the inflow of foreign patients might exacerbate the existing health care worker shortage and divert human resources. Proper regulations are needed to avoid this outcome while maximizing the opportunities arising from a more open services trade regime.

Moving beyond these examples, several other chapters clarify the role that "new" trade policies play in mediating the trade-sustainable development relationship. Labeling is one issue that the trading system needs to come to terms with. Private sustainability standards, covering social as well as environmental issues, are proliferating. This process is problematic from a global governance standpoint, as the emerging rules of the game are strongly shaped by the preferences of consumers in the rich northern markets. There is, of course, a strong case for developing countries to become more involved in global standard-setting platforms, but that is a long-term process that requires significant developments in human, financial, and institutional capacity. In the short-to-medium term, it will simply not be possible for developing countries to participate adequately in these highly specialized and technical bodies, so it is important that independent observers and international organizations ensure that developing country perspectives are incorporated in the design of key standards.

Notwithstanding these issues, the propagation of standards and labels through global value chains nonetheless holds promise for the social and environmental aspects of development. Large lead companies are increasingly seeking to put in place transparent supply chains, with rigorous labor and environmental standards, along with regular audits.

Ikea has taken this step in the furniture sector, and large “fast fashion” companies like Zara and H&M have done it in apparel. Of course, monitoring remains far from perfect, which means that compliance is similarly patchy. Nonetheless, there appear to have been significant steps forward in this area in recent years, with the prospect for more in the future.

The emphasis in this book has been on “trade and...” subjects, rather than the traditional arguments for the gains for trade, based on income and productivity. We consider those mechanisms to be important, but trade economists need to move beyond them if we are to be heard in the context of the SDGs. Increasing incomes is only one part of sustainable development, and the influence of the trade community will be correspondingly lessened if we focus only on that.

## 20.2 Complementary Policies

A key point that cuts across most of the chapters is that trade policy on its own is not enough to ensure progress toward achieving the SDGs. Following the logic of domestic distortions, it is also important that developing and developed countries alike focus on a range of complementary policies that help ensure the efficiency gains from trade can indeed support economies, societies, and the environment.

One key area that needs to be addressed is tax policy. Trade has distributional consequences, but it does not follow that trade policy is the best way of effecting redistribution. It can be used in contexts where other mechanisms are not reasonably available, but typically, the general taxation system—income, corporations, and consumption taxes—is better suited to raising revenue, and the general government budget can allocate those resources better than trade can. Financing public goods is an important part of developing countries’ policy agenda, and that necessitates a stable revenue base. Some developing countries rely heavily on trade taxes to support these kinds of policies, and cannot suddenly move to a relatively liberal trade stance without first developing the governmental infrastructure that allows for efficient revenue raising from income (personal and corporate) and consumption.

In addition to tax policy, it is also important to develop specific labor and environmental regulations. Although some trade agreements try to incorporate these issues, it is typically difficult to deal with them in other than a general way internationally. Preferences differ across countries, and development level plays a role in that, but it is important that all countries commit to developing appropriate regulations and standards. Participation in global value chains, which can be a vector



for norm dissemination in this context, is one mechanism that can drive progress, but fundamentally the effort needs to be domestic. There are other cases where international coordination can be profitable, for instance, climate change, but the voluntary nature of commitments in that case again indicates that the main thrust of policy has to be domestic. Trade can play a role in labor and environmental issues, as indicated in the chapters of this book, but it is no substitute for effective, targeted domestic policies.

## 20.3 Tracking Performance

One particularly weak point of the SDGs' trade approach lies in measurement, performance tracking, and evaluation. The SDGs have many associated indicators, but the trade indicators are overly simplistic, and in some cases not soundly anchored in economists' understanding of the benefits of trade. Only three indicators are explicitly devoted to trade, in addition to the inoffensive suggestion of tracking the proportion of tariff lines applied to least developed countries' (LDCs) and developing countries' exports that are zero duty. The three indicators (17.10.1–17.10.3) are worldwide weighted average tariff; developing countries' and LDCs' share of global exports; and average tariffs faced by developing countries, LDCs, and Small Island Developing States. The nature of these indicators suggests that there was scant real consultation with the trade community. Developing countries' share of world exports, for example, suggests a purely mercantilist approach to analyzing the benefits from trade: exporting is good, but importing is not. Tracking average tariffs suggests that those measures are the primary barrier faced by developing country exports, when trade economists typically agree that, at least for access to developed country markets, nontariff measures and frictional barriers are more important. In light of the many and varied links between trade and sustainable development brought out in this book, it is very disappointing that the highest-level monitoring effort for trade in the SDG context is so misguided.

Of course, the decentralized nature of research and policy work means that the official United Nations SDG monitoring effort is not the only forum that can track trade-related indicators in a sustainable development framework. The Group of 20 (G20) countries, for example, have committed to reduce trade costs by 15%. That measure is much more appropriate than tariffs, because it covers nontariff measures, as well as behind-the-border policies that have trade impacts. It emphasizes the overall goal of reducing the transaction costs associated with importing and exporting, but is not prescriptive as to the exact steps needed in

particular country contexts. APEC has previously had success with such an approach through its Trade Facilitation Action Plans (e.g., Shepherd 2016). Indications are that international organizations like the World Bank and the Organisation for Economic Co-operation and Development, both of which have extensive experience in measuring and analyzing trade costs over time, will be monitoring the G20 commitment. This kind of approach is much better suited to maintaining and deepening a relatively global market for goods than the overly restrictive and simplistic indicators identified by the SDGs.

The G20 initiative is welcome, and provides a much stronger basis for examining the sustainable development implications of trade than does the SDGs' indicators framework. However, the available sources on trade costs, such as the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP)–World Bank Trade Costs Database (Arvis et al. 2016) are necessarily highly aggregate. Moreover, they measure trade costs in their entirety, i.e., the complete price wedge between production and consumption. In tracking performance on trade policy, it is necessary to relate these overall measures back to their policy components. Arvis et al. (2016) take some steps in that direction, by looking at policies like logistics and trade facilitation, connectivity, and regional integration. But clearly, much more detail is necessary.

This work presupposes a significant data collection effort on applied trade policies, focusing on nontariff measures and behind-the-border policies. Indeed, nontariff measures are particularly important from a sustainable development standpoint, because they include social and environmental standards and labeling requirements. The United Nations Conference on Trade and Development (UNCTAD), in cooperation with other international organizations, has been collecting new data on nontariff measures, and now covers 56 countries (counting the European Union [EU] as one). This new TRAINS dataset is an important resource, and researchers need to connect it with data on trade costs to assess the extent to which different types of nontariff measures contribute to them. But there are also important limitations. Many countries are still not covered by the database. Moreover, there is as yet little prospect of obtaining panel data, due to the difficulty and expense of collecting data. From a development point of view, it is also significant that the TRAINS classification only includes public, mandatory measures; it does not capture private standards or labels, which this book has shown play an important role in mediating the trade-sustainable development relationship. It will therefore be important to collect additional data to encompass these measures, but experience suggests that this kind of work has problems in terms of classification and source data availability. Nonetheless, the returns are

high, and indeed this aspect of data collection represents an important intermediate step in better understanding the relationship between trade and sustainable development, and tracking it across countries and through time.

Welcome though it is, even the G20 initiative tracks trade policy, in a broad sense, but not its development impacts. It will be important for researchers and policy analysts to make use of new and established data sources alike to identify clear mechanisms linking trade and sustainable development, with all the ambiguity that relationship entails. Increasingly, it will be important to put quantitative flesh on the analytical bones, by using data to estimate causal relationships. That exercise is always fraught from a technical point of view, but changes in development policies over the coming years will hopefully provide natural experiments that can be exploited to plausibly identify causal effects.

Several areas addressed in this book suggest future research efforts with a performance measurement emphasis. First comes gender. There is relatively little robust research on trade in gender, mainly due to lack of data. That constraint should loosen somewhat in coming years, as trade projects increasingly need to incorporate gender aspects. As a result, it should increasingly be possible to examine issues like the extent to which the gender wage gap persists in internationally engaged versus domestically oriented firms, and the effects of trade opening on both female employment and net income in female-headed households, taking into account income and price effects. Theoretical ambiguity in many of these relationships mandates establishing credible baselines across a range of countries, and allowing for significant cross-country variation in results. Identifying the country-level factors that influence outcomes will be an important contribution that will have immediate flow on policy implications.

A second high-priority area is the environment. Although there is a burgeoning literature on trade and the environment, it is important to develop high-impact studies that maximize micro-data usage. Macro-level trade sustainability initiatives are difficult to assess because implications vary considerably across countries, and even across firms within a country. It will be important to look at instances of environmental standard-setting and labeling to identify how that affects the link between trade and environmental quality, including climate change. Arguably the most important point is the counterfactual: in assessing the impact of trade on environmental compliance in developing countries, the comparison should not be with what happens in developed countries, but instead with what domestically oriented firms in the same country do. In other contexts, such as trade and wages,

there is clear evidence that although internationally engaged firms in developing countries pay less than in developed countries, those wages are still typically higher than those prevailing among domestically oriented firms in the country in question. Developing empirical results where the counterfactual is clear and easily understood is important in terms of avoiding confusion in the public debate.

Although this discussion has focused on areas where fresh research would be particularly welcome, it is also important to highlight two areas where there is extensive research, but where the results are not yet widely disseminated. Both areas move away from broader sustainable development issues to look at income effects as they pertain to trade and inequality, and trade and poverty. The latter is well understood in terms of theory, and there are extensive empirical applications, some of which have been reviewed in this book. Nonetheless, there is a clear gap in understanding between policy makers and the public. It is important to return this work into the foreground, not just to highlight its results, but to clarify the ambiguous place from which it starts, i.e., that trade can be good or bad for poor households depending on their production and consumption patterns. That nuance is greatly needed, as trade economists are increasingly seen in policy discourse as excessively emphasizing the gains from trade, and not enough the potential costs—even though both are well accounted for, even in textbook models. By contrast, trade and inequality is currently producing extensive and complex theoretical and empirical contributions. Since there is no simple or universal relationship, the emphasis therefore needs to be on identifying the ways in which trade can interact with domestic institutions, particularly tax policy and labor laws, to produce different observed changes in inequality across countries. The issue is very much at the forefront of policy debates around the world, so the trade community needs to tackle it squarely and with nuance.

## **20.4 Dealing with the Anti-Trade Backlash?**

The project that gave rise to this volume was conceived in early 2016, before the current backlash against trade symbolized by the United Kingdom's decision to leave the EU, and the election of Donald Trump in the United States (US). The consequences of these for the global trade architecture are potentially profound. The Trans-Pacific Partnership, a trade agreement in the Asia and Pacific region, appears doomed: US ratification is required for entry into force, but President Trump has pulled the US out of the agreement. The Trans-Atlantic Trade and Investment Partnership, which links the US and the EU, has

hit difficulties with public opinion on both sides of the Atlantic. Even more worryingly, President Trump has suggested that the US may adopt unilateral trade policies to deal with supposed “unfair” practices by countries like Mexico and the People’s Republic of China (PRC)—an act that could be outside WTO rules. The multilateral trading system is under considerable stress, probably the most severe since the establishment of the WTO in 1995.

It is important to keep these developments in perspective, however. In particular, it is important to recall that many countries view trade very positively, particularly developing countries. Data from the Pew Research Center (2014) show that 87% of respondents in developing countries believe that trade is good, while 66% believe that it creates jobs, and 55% believe that it increases wages. Indeed, for an agreement like the Trans-Pacific Partnership, the recent attitude of the US appears quite anomalous: from Viet Nam to Japan, the other countries involved are generally enthusiastic about the agreement, and some appear to be exploring proceeding without the US. For the most part, developing countries recognize the constructive role trade can play in their sustainable development strategies.

Based on the available evidence, the “trade backlash” appears limited to the US, and some countries within the EU. Particularly with the EU, it is important not to see these markets as monoliths. Northern European countries, like the Netherlands and the Nordics, are generally supportive of trade liberalization. One factor that likely makes this possible is that they have generous social welfare programs that protect those displaced by trade. It is important to recognize that trade can create losers as well as winners, in developed countries and developing ones alike. Trade economists have traditionally proposed programs like Trade Adjustment Assistance in the US to protect against unemployment, and assist in retraining. The political evidence suggests that these programs are inadequate. However, in the US, the problem is symptomatic of broader issues with the social welfare system, which is less developed than in most other parts of the developed world. Pro-trade forces in developed countries need to develop innovative strategies to help people move from sunset to sunrise sectors. But the problem is not easily solved, as skills are often markedly different by sector—particularly in the move from manufacturing to services—and geography is a significant barrier. Trade economists have traditionally assumed that, in integrated markets like the US, people who lose jobs or incomes as a result of trade liberalization will be willing to move to where the labor market is better. But the careful empirical work of Autor et al. (2016) suggests that that process is in fact held back by significant frictions, which means that adjustment costs are higher and longer

lasting than previously thought. Reducing these frictions, as well as preventing the worst dislocation impacts, is a key priority for the US and other developed countries.

Where does this leave trade in the context of the SDGs? The current political dynamic is something of a paradox: much of the world remains convinced that trade can be part of a robust development strategy, but it is impossible to move forward with multilateral liberalization, or even most mega-regionals, in the absence of US leadership. The stage is set for other large countries that see the value of the global trading system to replace traditional US stability. In Asia, it seems likely that Japan will play a leading role in pressing for continuing liberalization, given that trade-driven productivity growth is a key part of Prime Minister Abe's economic policy agenda. The PRC has also indicated that it will play a leadership role, although its approach to liberalization is less comprehensive. It is unclear whether a trade regime underpinned at least in part by the PRC will be more or less supportive of sustainable development than one supported by the US. Given ongoing difficulties with the PRC's environmental and social regulation, and the country's preference for not intervening in regulatory matters elsewhere, it is likely that the agenda will be more narrowly focused. Such an approach can potentially support economic growth and development, but big questions like climate change, labor rights, and "new" issues like intellectual property and services will likely see less progress than had been anticipated.

The SDGs are a joint obligation of developed and developing countries. Trade as an implementing mechanism now faces real challenges as a result of that bargain. Developing countries seem keen to move forward, but some important developed countries now face substantial political difficulties in doing the same. There is reason to question the commitment of some developed countries to maintaining relatively open markets for developing country exports. It will therefore be important for the trade and development communities to be vigilant in working against protectionist impulses, and in promoting the necessary complementary policies that can ensure that trade is a broad-based engine for sustainable development.

## **20.5 Conclusion**

This book has brought together contributions from experts around the world to examine the ways in which trade interacts with sustainable development, and can ultimately support implementation of the SDGs. The SDGs themselves do not give great prominence to trade, so it will be

up to the trade community to develop policy stances and analytical work that can help policy makers make full use of trade's potential to promote economies, societies, and the environment. By examining the key ways in which trade interacts with economic, social, and environmental objectives, we hope this volume will cultivate deeper insights and creative policy solutions that can benefit developing and developed countries alike.

Attitudes toward trade naturally vary across countries and ebb and flow over time. The trade community will need to focus on two separate tasks in the SDG context. Developed countries need to renew efforts to develop a pro-trade consensus, and that means making serious efforts to tackle perceived environmental and social problems that are associated with increased trade integration. Trade economists will need to move away from their favored ground of narrow trade policy to address a wider policy range, most specifically redistribution and environmental and social regulations.

At the same time, developing countries need to focus on how trade can continue to develop given the strong consensus that already exists. Developing countries will need to increasingly provide their own demand for imports, as market access in some developed markets looks unpredictable (Helble and Ngiang 2016). Reinvigorating South-South trade through increasing liberalization is one important priority. But at the same time, trade specialists in developing countries will also need to deal with social and environmental issues, again moving into the territory of complementary policies. Finally, developing countries also need to ensure that the benefits from trade opening continue to be distributed inclusively. Many developing countries, especially in Asia, have so far been able to use trade opening as a tool to effectively fight poverty. However, as these economies further develop and integrate into the global economy, continued economic restructuring is needed. Smart policies are needed to minimize the negative impacts of these adjustments. Trade can be a powerful engine for promoting sustainable development, but the agenda for the trade community in the current climate is an ambitious one.

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\* The Asian Development Bank refers to "China" as the People's Republic of China.



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## **WIN-WIN**

### *How International Trade Can Help Meet the Sustainable Development Goals*

The recently agreed Sustainable Development Goals (SDGs) are expected to guide development through the 2030 time horizon. The 17 SDGs cover many areas, such as poverty, health, sustainable development, and the environment. Given that trade is not an end in itself, there is no specific SDG goal for trade, but it is recognized as an important means of implementation. The objective of this book is to demonstrate to the international development community, including policy makers in developing countries, the contribution that international trade can make to achieving the SDGs. Economists have long argued that trade can promote income growth, which can then support sustainable development. But there are also more direct linkages between trade and sustainable development, for instance by affecting the price and availability of important goods and services for development, such as health and education. This book maps out a triple-win scenario when good trade policy spurs international trade, contributes to development-friendly outcomes, and supports the achievement of the SDGs.

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