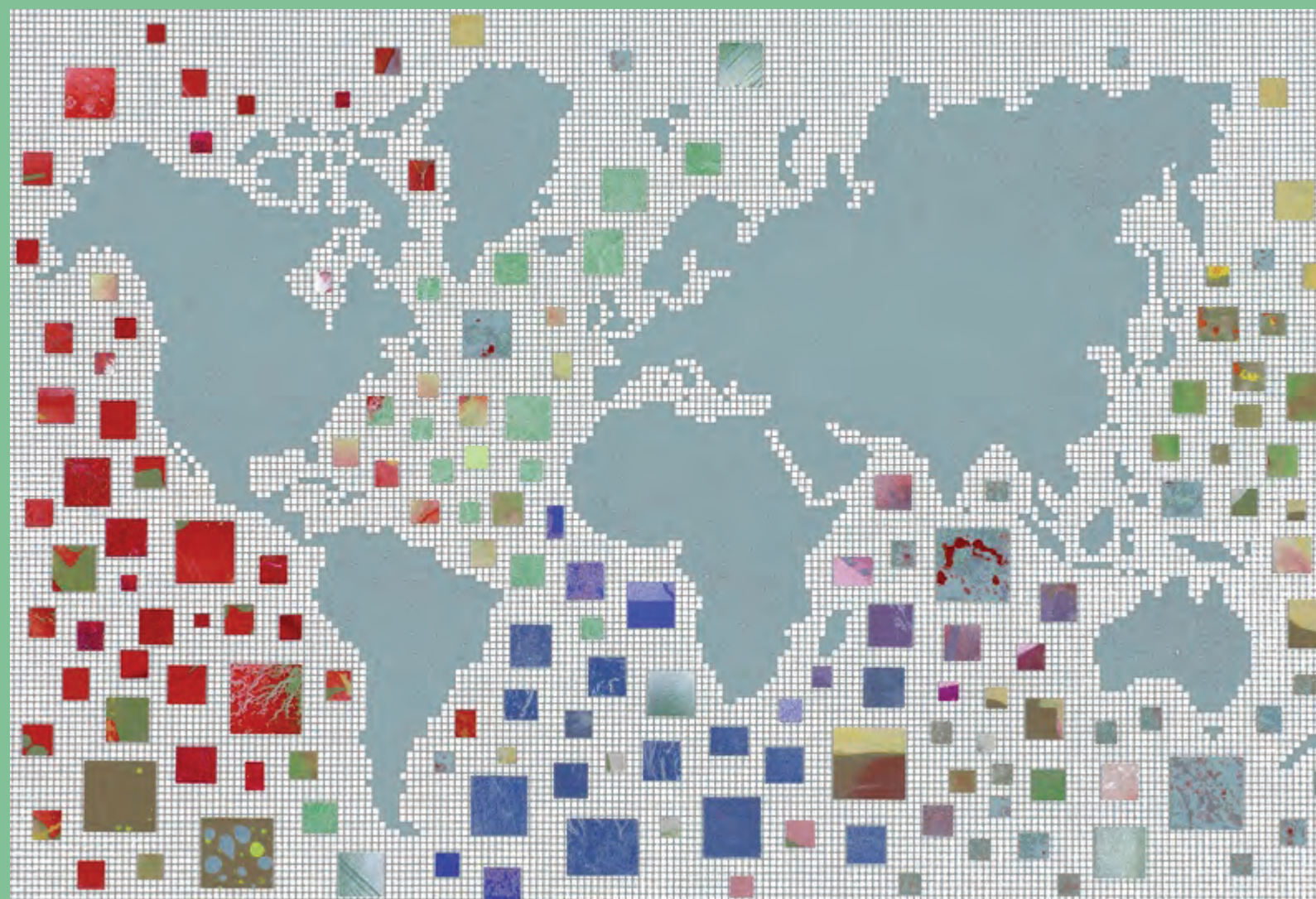


World Trade Report 2014

Trade and development:
recent trends and the role
of the WTO



What is the World Trade Report?

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

Using this report

The 2014 World Trade Report is split into two main parts. The first is a brief summary of the trade situation in 2013 and early 2014. The second part looks at recent trends in trade and development and the role of the WTO.

Find out more

Website: www.wto.org
General enquiries:
enquiries@wto.org
Tel: +41 (0)22 739 51 11

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Foreword by the WTO Director-General

Since the start of the millennium we have seen strong evidence of how trade, as a critical component of economic growth and development, can make a positive difference in people's lives. Rapid economic growth in many developing economies over this period has been combined with deeper integration into the global trading system. This experience has highlighted the role that trade can play in boosting per capita incomes, helping developing countries to achieve wider societal goals, and in improving access to advanced technologies and knowledge, thereby setting the stage for future growth.

This period has also brought an evolution in the challenges of development and the emergence of new trading patterns and practices. Therefore, it is important to consider how the interplay between trade and development has evolved – and to support our members to reflect on what this means for the work of the WTO. That's what the 2014 *World Trade Report* sets out to do. The report focuses on how the relationship between trade and development has changed since the start of the millennium, identifying four key trends which have altered the way that trade affects development outcomes.

The first trend we identify is the accelerated economic growth in developing countries since the start of the millennium. Average rates of economic growth have tripled compared to the 1990s, although there is marked variation from country to country. The growth trajectory seems to be in line with long-term historical experience, including that of Japan and the newly-industrialized economies in East Asia, suggesting that once a catch-up process commences, rapid development is possible and has the potential to push incomes toward developed country levels. In each of these cases, rapid growth has been accompanied by increasing trade flows, which in many instances were preceded by the lowering of tariff barriers.

This gives rise to a number of development challenges, such as how to initiate catch-up processes in those countries still left behind, or how to ensure, once growth begins to accelerate, that it is inclusive and sustainable. Recent experience has shown that, while growth can lead to improvement in human development indicators, better environmental outcomes or a more equitable distribution of income do not automatically follow.

The second trend is the expansion of global value chains. Global value chains, or GVCs, are not a new phenomenon, but they have expanded and deepened significantly in recent years, offering greater opportunities for developing countries to integrate into the global economy at lower costs. Improvements in communication technology and declining transportation costs worldwide have made it easier to “unbundle” tasks internationally. Thus, tasks that were once performed in a single factory or country are increasingly divided up between different countries to take advantage of their different skills and cost advantages. This allows countries to export by mastering certain specific tasks or manufacturing certain components instead of the entire final product. This report shows that over the last decade developing

countries have increased their involvement in GVCs, and that South-South GVCs have become more important. The developing countries that have been most successful in integrating into GVCs have been those with a favourable business environment, good infrastructure, and lower tariff and investment barriers.

However, access to GVCs is not automatic, and unlocking their development potential can pose a series of challenges for developing countries. A country wanting to integrate into these production chains needs already to be at the cusp of producing at globally competitive levels of quality and efficiency. In practice this has meant that some are not able to participate meaningfully in GVCs, with many least-developed countries being left behind. While initial integration into the lower end of value chains typically triggers productivity improvements, competition to carry out these low-skilled tasks is often intense. Upgrading to higher value-added tasks can enable developing countries to capture more benefits from GVCs but can be difficult and costly to achieve. In addition, when competing for the investments that many countries require in order to participate, developing countries can risk being drawn into a race to the bottom on regulatory standards.

The third trend identified in this report is the surge in agricultural and natural resource prices over the last decade, and the growing importance of commodity exports. This shift has bestowed significant gains on those developing countries that are in a position to export commodities. Although the risk of a reversal cannot be ruled out, the state of global demand – and especially the strong demand from emerging economies – suggests that prices of agricultural goods and natural resources will remain robust in the foreseeable future.

This means that the agricultural sector, which employs more than half of the labour force in developing countries, can continue to play a critical role in lifting people out of poverty. This role could be strengthened if remaining obstacles to agricultural exports were reduced. Tariffs in destination markets and distortive subsidies continue to be high. Moreover, product standards, which are growing in importance, can be costly for smaller producers in developing countries to meet. High degrees of market concentration, which seem evident in some segments of agricultural value chains, can also undercut bargaining positions of small producers in developing countries. In the longer term, agriculture's ability to contribute to development will depend on achieving continuous improvements in productivity and lowering tariff barriers and distortive subsidies globally.

Favourable price movements have translated into significant per capita GDP growth in several resource-rich developing countries, especially in Sub-Saharan Africa and Latin America, with a number of them managing to achieve broad-based prosperity. Nevertheless, implementing a resource-based trade and development strategy presents a number of challenges. For example, the quality of institutions is important in ensuring that revenues are harnessed in a way that avoids boom-bust

cycles and in encouraging diversification to reduce macroeconomic volatility. In addition, while attracting foreign direct investment to develop the natural resource sector is critical, there are risks that very capital-intensive methods of extraction cannot be converted into broad societal benefits and that they will displace non-resource-based investments. Similarly, environmental risks need to be anticipated and mitigated.

The fourth trend is the increasingly global nature of macroeconomic shocks. While the crisis of 2008-09 had its roots in the financial markets of a number of developed countries, the impacts were felt globally. A sharp reduction in trade and investment flows, exacerbated by a fall in aggregate demand and the drying up of trade finance, helped transmit the economic shocks to producers and traders in developing economies. However, the fact that we did not see an outbreak of protectionism on the scale experienced in previous crises meant that a significantly worse fall in international trade was averted.

Some trade restrictions were put in place during the crisis, but neither developing nor developed countries systematically raised trade barriers. The WTO's rules-based system and its monitoring of members' trade policies played a crucial role in keeping protectionist responses under control. Ultimately, the coordinated response, combining macroeconomic stimulus with a commitment not to introduce protectionist measures, was critical in pointing the way back to growth and in safeguarding the development gains that were made in the period before the crisis hit.

In analysing these trends, it is clear that both trade and the WTO have been contributing to economic development in a number of important ways. Foremost, the WTO provides a trading environment with clearly defined rules. At the same time, it allows developing countries to take advantage of flexibilities in implementing their commitments. As a result, it has supported wider integration into global value chains, allowed developing countries to take advantage of rising commodity prices, and helped resist the adoption of protectionist measures during the global crisis. The changes we have seen during this period underline the fact that an open, predictable, non-discriminatory, rules-based multilateral trading system will be a necessary tool to make trade work more effectively for development in the future.

While some developing economies have made significant progress in recent years, much still needs to be done to close the gap for many poor economies. The WTO's work is therefore more important than ever. In December 2013, WTO members took a series of decisions in Bali that, by also setting the stage for future negotiations, will help poor countries realize their export potential and sustain the development momentum created in the past decade.

In highlighting how the relationship between trade and development has changed since the start of the millennium, this report provides food for thought for WTO members. It shows again the importance of our work in updating the WTO's rules, disciplines and flexibilities, and it illustrates some of the challenges that we will need to address if we are to ensure that all countries are able to participate fully in the global economy in the years to come, and that people all over the world are able to feel the benefits of trade in improving their lives and the prospects of their families and communities.

As we look to the future, I am always conscious that discussion on the post-2015 development agenda is currently taking shape at the United Nations. This is an important exercise in marshalling the development efforts of the international community, and it is a conversation in which the WTO and its members are deeply involved. The launch of the *World Trade Report* is an opportune moment to recognize again the contribution that trade and the open, non-discriminatory, rules-based multilateral trading system of the WTO makes to development – and the contribution that it can make to the post-2015 development agenda.



Roberto Azevêdo
Director-General

Executive Summary

A. Introduction

The *World Trade Report 2014* examines four trends that have characterized the last decade: (i) the rise of the developing world, (ii) the expansion of global value chains, (iii) the increase in prices of commodities and the growing importance of commodity exports, and (iv) the increasingly global nature of macroeconomic shocks. In analysing these trends, the report explores how they have reshaped the role that trade plays in facilitating development, while highlighting remaining impediments for the expansion of global development. Building on this analysis, the report illustrates how the WTO system's features have helped underpin the recent development gains of many developing countries by allowing them to adapt to, take advantage of and mitigate risks arising from the four trends.

The world has experienced several major waves of economic development since the industrial revolution of the late 18th and early 19th centuries. Each wave has been accompanied by an equally major expansion of international trade and marked by faster catch-up growth than the previous wave. The initial wave, in the latter half of the 19th century, saw early industrializing Europe and North America pull away from the rest of the world while expanding their trade. A subsequent wave after the Second World War was underpinned by the gradual post-war restoration of open trade after its interwar collapse, and saw Japan and other newly industrialized economies rapidly catch up with the West, whose growth was also accelerating. The current and most extensive wave started after the 1980s and has seen some countries, including China and India, opening up and embark on the most rapid process of industrial catch-up experienced to date.

As global economic development has widened, deepened and accelerated, the international economic system has had to adapt. In the mid-19th century, economic relations were governed by a Europe-centric network of bilateral trade agreements and the international gold standard, nominally led by Great Britain, which was the dominant economic power at the time. After 1945, economic relations were governed for the first time by a multilateral system of rules, including the General Agreement on Tariffs and Trade (GATT) and Bretton Woods institutions. These same institutions, dramatically expanded, also underpin the most recent phase of global economic development.

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B. The increasing importance of developing countries in the global economy

Incomes in developing countries have been converging with those of rich countries since the 1990s because growth has accelerated in developing economies, while in developed economies it has slowed down. The performance of developing country G-20 members has been particularly strong.

The growth spurt in developing countries has been dramatic: After growing a mere 1.5 per cent annually in the 1990s, incomes have grown by 4.7 per cent per year on average thereafter. Meanwhile annual per capita income growth in the developed world slowed to just 0.9 per cent, down from 2.8 per cent in the 1990s. Developing country G-20 members have done particularly well (5.2 per cent), while both least-developed countries (LDCs) and other developing countries have grown 3.7 per cent. Given their size, rapid industrialization and greater trade openness among developing country G-20 members such as China, India and Brazil may have drawn along other developing countries. Higher demand for commodities resulted in higher prices in the 2000s, consequently boosting incomes in resource-exporting developing countries, including many LDCs. Developing economies as a whole now constitute around half of both global output and global trade (rising from 39 and 32 per cent respectively in 2000).

These development patterns have been transforming the world's income distribution. The distribution has become much more equal overall through decreases in inequality *between* countries. Until 2000, the distribution was characterized by two peaks, one representing poor developing economies and the other corresponding to rich developed economies. Thereafter, developing economies' convergence has narrowed the gap between rich and poor nations. Most notably a third peak has emerged in the middle, reflecting the higher growth of many G-20 developing countries, such as China, relative to other developing countries.

Despite having narrowed the income gap with industrialized countries, developing economies still have a long development path ahead of them. LDCs remain far behind, with per capita incomes of just 4 per cent of the developed economies' average.

Higher GDP per capita can help to achieve other societal objectives. Given that more trade is

associated with faster growth, trade can make it easier to achieve these goals.

Trade can increase GDP in a number of ways – for example, by improving resource allocation through specialization according to comparative advantage or by allowing economies of scale in production to be exploited. Open economies also grow faster because trade fosters investment, innovation, and institutional reform.

However, development goes beyond higher GDP per capita. Other important indicators of well-being include life expectancy at birth, infant mortality, nutrition, literacy, gender inequality and employment. Some of these factors are summarized in Human Development Indices (HDIs), which are positively correlated with GDP growth when figures are weighted by population.

No clear picture emerges of the impact of growth on other dimensions of development such as income inequality and environmental performance.

Higher per-capita GDP may not benefit many people if growth is accompanied by rising income inequality. Available evidence does not suggest a systematic relationship between per capita GDP growth and income inequality. The “Kuznets curve” hypothesis suggests that as a country develops, income inequality may worsen at first but then improve as the country reaches a certain level of development. However, this is not strongly supported by empirical evidence. Technological change and government policies likely exert a stronger influence on inequality in particular countries and at particular times.

Various environmental indicators ranging from greenhouse gas emissions to deforestation can be summarized by an Environmental Performance Index (EPI), which in turn can be compared to income growth. In the last decade, there has been a positive relationship between growth and environmental quality. This suggests that countries with rising incomes were able to pay more to preserve the environment. To the extent that trade and other policies can promote economic growth, they may indirectly help to improve the natural environment. However, empirical evidence has to date produced mixed results on this question.

Over the last couple of decades, developing countries as a whole have reduced most-favoured nation (MFN) tariffs. Focusing on MFN tariffs only, their average reduction has been greater in G-20 developing countries.

The main periods of trade opening in developing economies have occurred since the 1980s and this

trend has accelerated in the last decade. As a group, developing countries have reduced the most-favoured nation tariffs they apply to imports. They have also increased the number of products with a “bound” tariff ceiling, and reduced these bound tariff rates.

Abstracting from their use of other trade policy measures, G-20 developing countries have been the most active in reducing MFN tariffs – significantly exceeding the average cuts made by other developing countries and LDCs. They have reduced their MFN applied rates by more than a third, from 15.6 per cent in 1996 to 10.1 per cent in 2009-11. They have bound over 80 per cent of their tariff lines and reduced their bound rates by a fourth, from 39 per cent in 1996 to 29.2 per cent in 2009-11. For example, China’s average MFN tariff has fallen from about 40 per cent in 1985 to under 10 per cent today. Several studies have shown that China’s accession to the WTO in 2001 has played a major role in this regard and had a positive impact on economic growth.

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C. The rise of global value chains

Developing countries are increasingly involved in international production networks and South-South global value chains (GVCs) are becoming more important.

GVCs are not a new phenomenon. However, the importance of GVCs in trade has been growing over time.

Although GVCs have been usually thought of as a relationship between developed countries (the North) and developing countries (the South), data show that developing countries are engaging in more GVC trade among themselves. While North-South GVC-based trade has remained stable, the share of trade in parts and components between developing countries increased from around 6 per cent of total trade in 1988 to almost 25 per cent in 2013.

Quantifying the importance of international production networks requires measuring exports in value added terms. Yet, data in value added are available only for some economies. Notwithstanding this limitation, the data illustrate that almost half of the world’s gross exports are related to GVCs, and that the economies which increased their participation in GVC trade between 1995 and 2008 the most are the Republic of Korea, Chinese Taipei, the Philippines, India and China. However, LDC participation in supply chains remains limited.

Foreign direct investment (FDI) flows are often crucial in establishing GVC linkages. Their evolution also highlights increasing involvement of developing countries in GVCs. Developing countries absorbed more than half of global FDI flows in 2012, versus less than 20 per cent in 2000. Developing countries have also become important sources of investments: while only 7 per cent of global FDI originated from developing countries at the end of the 1980s, developing countries accounted for 34 per cent in 2012.

Available data suggest that, on average, developing countries' participation in GVCs through services exports has increased.

Services traded across borders within GVCs account for almost 16 per cent of developed country exports and slightly more than 10 per cent of developing country exports. However, these figures neglect indirect exports of services value added embodied in manufactured goods. In value added terms, services exports within GVCs are only slightly lower than manufacturing exports in developing countries and even higher in developed countries.

Measuring GVC involvement in terms of IT and business offshoring, developing countries increased their share of global exports of these services from 25 per cent in 2005 to 31 per cent in 2012. However, LDC participation remains low. The share of LDCs in global exports was only 0.33 per cent in 2013, which is significantly lower than their share of world exports in commercial services (0.65 per cent) and merchandise (1.14 per cent) in 2013.

In general, services trade is less regionalized than merchandise trade. While market proximity might be less relevant for offshoring services, other factors such as language, skills, the business environment or barriers in the form of behind-the-border regulations are still significant in determining to what extent developing countries can integrate into GVCs.

GVCs offer an opportunity to integrate in the world economy at lower costs. But gains from GVC participation are not automatic.

GVCs offer countries the possibility to join global trade by becoming good at producing just some components or tasks instead of complete products.

Not all countries manage to join GVCs; to join, a country needs to be sufficiently close to having the capacity to produce at world standard quality and efficiency levels. If this is the case, then technology and knowledge transfers from other countries – often facilitated through foreign direct investment (FDI) – can catapult it over the quality and efficiency thresholds. Such initial integration

into GVCs may trigger development gains by shifting labour from agriculture to higher-productivity tasks in manufacturing and services.

Developing countries initially join GVCs by performing low-skill tasks, for example, in manufacturing and assembly stages that can be easily shifted to suppliers in competing countries. Value capture at these stages is low and declining relative to activities such as research and development (R&D), design, branding and marketing which are typically the domains of lead firms in GVCs and where capabilities are harder to replicate. Therefore, to avoid getting stuck at middle-income status, “functional” upgrading of the activities performed, e.g. moving from assembling products to designing them, could be an important step for achieving further development gains. While technology transfers may be helpful in upgrading production processes and product quality, functional upgrading is harder to achieve.

... and there are risks involved.

First, GVC participation increases a country's exposure to global business cycles and to supply disruptions in faraway locations, if these produce crucial inputs into production.

Secondly, the fact that integrating into a GVC may be done with a relatively narrow set of skills implies that competitive advantage becomes more fleeting and risks of industries relocating are higher.

Thirdly, the competition to attract new investments exposes countries to a potential race-to-the-bottom on domestic regulation.

Fourthly, GVCs may increase income inequality as highly skilled individuals' remuneration tends to rise relative to that of low-skilled individuals. At the same time, the share of profit in output increases relative to that of labour, which may be likely as a result of increasingly oligopolistic structures in many markets.

Obstacles for developing countries seeking to integrate into GVCs include infrastructure and customs barriers. Directing Aid for Trade resources toward these objectives should therefore remain a priority.

A recent survey conducted by the WTO and the Organisation for Economic Co-operation and Development (OECD) reveals the main barriers that developing country firms perceive as hindering their participation in value chains. Both developing country suppliers and lead firms regard transportation costs and delays, customs procedures as major trade-related difficulties. Import duties and licensing

requirements are also deemed significant barriers. The survey also highlights inadequate infrastructure, limited access to trade finance, and standards compliance as obstacles.

Evidence suggests that GVC participation is greater in countries with higher indexes for quality of infrastructure and institutions, as well as lower customs barriers.

Directing Aid for Trade resources to trade facilitation is particularly important as customs procedures are perceived to be major obstacles to the participation of developing countries in value chains. Implementation of the WTO Trade Facilitation Agreement will provide an important contribution to remove barriers that reduce developing countries' ability to participate in GVCs.

Tariffs on intermediate goods have declined. Countries are entering into deep preferential trade agreements.

The effect of a marginal increase in trade costs is much higher when production is spread across different countries than when there is a single production site. On average, developing countries have significantly decreased their tariffs on parts and components, but variation among countries is high.

The proliferation of preferential trade agreements (PTAs) reflects to some extent the increasing demand for deeper integration that can address new cross-border effects resulting from the changing nature of trade. In fact, these PTAs increasingly cover disciplines related to behind-the-border non-tariff measures. In particular, provisions related to competition policy, investment, standards and intellectual property rights were present in more than 40 per cent of PTAs in force in 2012. However, since the subjects that these agreements attempt to address are global in nature, they will eventually emerge as issues at the multilateral level.

Countries with higher GVC participation have also made deeper commitments under the WTO's General Agreement on Trade in Services (GATS).

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D. A new role for commodities in development strategies

Commodity prices increased significantly between 2003 and 2008, leading several commentators to argue about a commodity "super-cycle". Several supply- and demand-side

factors have contributed to the emergence of this super-cycle.

The prices of energy and metals and minerals more than doubled between 2003 and 2008. The resource- and energy-intensive growth of several G-20 developing economies was the main driver of the upward trend in the prices of mineral and energy commodities. In the same period, the real price index of agricultural commodities almost doubled. The price hikes that began in 2003 were due to a number of factors, including extreme weather, policies to promote use of biofuels, depreciation of the US dollar, longer-term economic growth in several large developing countries, increased demand for commodity futures markets as a result of both speculation and portfolio diversification, low levels of stocks, trade policies and stockpiling.

Boom-bust cycles in commodities are not uncommon. Even though commodity prices have eased recently, they are still twice as high compared with a decade ago. There are various reasons to believe that prices will remain high and subject to boom-bust cycles in the years to come.

Price volatility is a characteristic of natural resources. Analysis shows that, despite not having reached the peaks observed during the 1970s, price volatility in the last five years has been higher than in the previous two decades. It is likely that volatility will continue to be a concern for importing and exporting countries.

Supply-side developments, technological change, the evolution of public policies and of consumer preferences are hard to predict. Projections on demand patterns, however, clearly suggest that high prices for commodities could persist in the years to come. The Food and Agricultural Organization of the United Nations (FAO) has suggested that by 2050 global food production will have to further expand by 70 per cent in order to feed a growing world population and simultaneously address existing malnutrition and hunger. Another reason why agricultural and food prices will probably remain high in the years to come is the co-movement between oil and food prices, which has increased dramatically since 2006.

In many developing countries the agricultural sector is important in terms of employment, production and consumption. Increases in agricultural productivity are crucial ingredients of poverty reduction. Agriculture is therefore of utmost importance to development strategies in the developing world.

The agricultural sector employs around half of the labour force in the developing world. The sector

represents over 70 per cent of the labour force in LDCs. The sector is particularly important in the context of poverty reduction considerations for two reasons: because poor households tend to spend a large share of their income on food; and because three out of four poor people live in rural areas in developing countries and most of them depend on agriculture for their livelihoods.

Evidence suggests that growth in agriculture delivers more poverty reduction than growth in other sectors in low-income economies. Moreover, virtually all economies that managed to reduce poverty significantly went through a period of increased agricultural productivity. This positive effect on poverty also materializes if agricultural productivity is enhanced through integration in global value chains.

Recent decades have witnessed an increase in agricultural trade, contributing to growth and poverty reduction.

In terms of value, exports of agricultural products nearly tripled between 2000 and 2012. In terms of volume, they increased by around 60 per cent over the same period. Agricultural trade as a share of domestic agricultural production and consumption has also increased in recent decades, reflecting increased integration of the agricultural sector in global markets.

Increased demand for high-value products and high prices in international food markets has created opportunities for developing countries to generate economic growth and poverty reduction through increased exports. The channels through which agricultural exports contribute to poverty reduction include employment creation in export value chains.

The changing nature of agricultural trade includes new market segments, new destination markets and new production structures.

During the last 50 years, the share of raw traditional agricultural exports in total agricultural exports has declined significantly. Processed agricultural products are now the largest share of total agricultural exports, representing over 60 per cent of the total. The share of fresh fruits and vegetables exports has also increased steadily over the past decades and now represents 10 per cent of total agricultural exports. Trade patterns have also changed: trade among developing countries and the share of Asia and Africa in global agricultural trade have increased significantly.

In recent years, the agricultural sector has attracted significant levels of investment, including in the form of foreign direct investment (FDI). Food safety and quality standards are spreading rapidly, as are food supply

chains, characterized by increased levels of “vertical coordination”, whereby successive stages in the production, processing and marketing of products are carefully coordinated. These changes in agricultural trade have important implications for developing countries. Most notably, they can contribute to increased technology transfers to developing country producers in those chains. The new production structures, however, have sometimes resulted in situations of capture, whereby lead firms in the value chain use their dominant position to appropriate most of the gains generated within the chain.

The challenges and opportunities arising from the changing nature of agricultural trade, including from high prices and volatility, differ significantly across countries.

The increased market share of developing countries in recent years mainly reflects the increased role of large emerging economies and, to a lesser extent, growth in other non-LDC developing countries. LDCs experienced a constant decline in their share of global agricultural exports. This suggests that non-LDC developing countries have been more successful than LDCs in taking advantage of the price boom for agricultural products.

The revealed comparative advantage of emerging economies has increasingly shifted towards processed agricultural goods. The fresh fruits and vegetables segment is the only area in which LDCs have expanded their market share in the past two decades. It now represents around 14 per cent of LDCs' total agricultural exports.

Issues related to food security also appear to be very important for LDCs since most LDCs are net food importing countries. Because food represents a high share of spending for poor households and because poor households can typically not further reduce the quantities they consume (low price elasticity), price hikes hit poor households particularly hard. It has been estimated that rises in food prices between June and December 2010 pushed an additional 44 million people below the US\$ 1.25 a day poverty line, with negative effects on food intake.

Developing countries are faced with five main challenges when integrating agriculture into their development strategies.

First, developing country producers face productivity gaps.

Stimulating private investments in agricultural R&D will be an important way for developing countries to strengthen their export position in agriculture. However, because of the many market failures in this sector,

public investment in agricultural R&D will continue to play a significant role. On the trade policy side, the lowering of barriers to the importing of new technologies could also contribute to fostering private investments in agricultural R&D.

Secondly, tariffs, subsidies and other price-based policy measures have been used frequently in the agricultural sector and continue to affect exporters in developing countries.

LDC exports of agricultural products face the lowest tariffs in developed countries markets. Developing countries applied an average duty on agricultural imports from LDCs of over 12 per cent in 2011. This is significantly higher than the average duty applied on oil or minerals (close to zero) and to non-agricultural products (around 2 per cent, taking preferences into account).

Subsidies have been used frequently in the agricultural sector. Support to agricultural products tends to be higher than support to non-agricultural products, especially in some developed countries, while the opposite is true in some developing countries. Support to agricultural products differs significantly across products, with some individual export products such as sugar, rice and milk receiving significant support. These subsidies continue to affect developing country exporters.

Thirdly, trade-related fixed costs play an important role in agricultural trade, including notably the cost of implementing sanitary and phytosanitary (SPS) measures related to food safety and animal and plant health.

The number and complexity of standards in international food trade have increased in recent years. As argued in the *World Trade Report 2012*, these measures can seriously hamper trade, even if they pursue valid policy objectives. Costs can arise through a variety of channels, including additional production costs to meet foreign standards (including private sector standards) or regulations, and certification costs to prove that a product actually meets such standards.

Costs incurred at the border constitute another type of fixed costs that can have a significant impact on trade flows. To the extent that administrative or logistical processes related to the importing or exporting of goods take time, they can significantly hamper trade, in particular for time-sensitive products such as fresh fruits and vegetables or flowers.

Fourthly, numerous value chains in the agricultural sector are characterized by market concentration,

sometimes at multiple points along the value chain. This creates problems particularly for small producers in developing countries.

The presence of economies of scale in various segments of the food chain has led to situations where individual segments are dominated by a few companies, often large multinational agro-enterprises. In 2004, the four top providers of agrochemicals held 60 per cent of the global market. Similar levels of concentration can be observed towards the end of the chain with, for instance, the top four international traders of coffee holding a market share of 40 per cent and the top four coffee roasters a share of 45 per cent.

Fifthly, price volatility creates difficulties for resource-constrained consumers and for producers in their investment decisions.

In periods of increased concern about food security, governments often intervene directly in markets, with the objective of reducing domestic prices and price volatility. Evidence suggests that if countercyclical measures are introduced simultaneously by net importers and net exporters, price hikes may actually be exacerbated. Indeed, if governments restrict exports of net-exporting countries and subsidize consumption in net-importing countries, this is likely to increase excess demand globally and lead to further price increases.

Trade in natural resources increased significantly between 2003 and 2010.

Between 2003 and 2008, trade in fossil fuels and metals and mineral ores more than tripled in value terms and increased by approximately 50 per cent in terms of volume. The great trade collapse of 2008 and the 2009 recovery were relatively more marked for metals and ores than for fossil fuels.

Mostly because of rising prices (at least until 2008), the share of fuels and mining products in world merchandise exports increased from 13.2 per cent in 2000 to 22.7 per cent in 2012.

For regions such as Sub-Saharan Africa and Latin America and the Caribbean, the share of fuels and mining products in their total merchandise exports has increased significantly in the last decade. Globally, the number of "resource-driven" countries increased from 58 in 1995 (representing a share of 18 per cent of global GDP) to 81 in 2011 (with a share of 26 per cent of global GDP).

Favourable commodity-price developments and large investment in new resource discoveries

have been reflected in significant GDP per capita growth in several resource-rich developing countries, especially in Sub-Saharan Africa and Latin America.

In Sub-Saharan Africa, resource exporters have experienced high GDP per capita growth since 2000. Analysis suggests that the correlation between GDP per capita growth and natural resource exports was negative or statistically not significant in the 1980-99 period, while it became positive and statistically significant in the 2000-12 period, when accounting for other factors.

For Latin America, it has been argued that the rise in world prices of commodities and the related increase in their output (and exportation) may have accounted for between one-third and half of the region's growth over the decade 2000-10.

But resource abundance is not a necessary, let alone sufficient, condition for growth and development.

None of the top six growth performers in Sub-Saharan Africa between 1995 and 2010 was resource-rich at the beginning of the sample period, implying that natural resource abundance has not been the only route to strong and sustained growth in the region. Some resource-rich countries have managed to translate GDP growth into broad-based prosperity.

There are several challenges faced by resource-abundant countries in the implementation of a resource-based development strategy. Firstly, in the presence of high but volatile natural resource prices, it is important to harness revenues and to avoid boom-bust cycles.

The commonly held view is that natural resource revenue windfalls should not be consumed immediately, but should be put in a fund, typically a sovereign wealth fund, to spread the benefits across generations and deal with the otherwise adverse effects of the "Dutch disease", when an increase in revenue from natural resources leads to a decline in the manufacturing sector due to an increase in the real exchange rate, and the so-called resource curse. The optimal policy from a classical economic theory point of view is, however, dependent on factors such as the price volatility of the resource in question, the level of development of the country and the broader constraints faced by the economy.

Building a domestic investment fund to channel part of the windfall towards domestic investment in infrastructure, health and education, and a liquidity fund

to collect precautionary savings in order to cope with price volatility, has proved to be useful.

Cyclicality of fiscal policy was common in developing countries until the early 2000s. Since then, there has been a historical shift towards countercyclical fiscal policy in a large number of countries, including resource-abundant ones. This report estimates that out of 45 resource-rich developing countries for which data on government spending is available, 16 (around 35 per cent) moved from a pro-cyclical to a counter-cyclical fiscal policy between the period 1960-99 and the period 2000-09.

Secondly, some degree of economic diversification is desirable.

There are several rationales for economic diversification that apply in particular to economies that specialize in natural resources. These include the positive spillovers that non-resource sectors can have on the rest of the economy, the problem of resource depletion; the possible detrimental impact of natural resource depletion on the environment, technological shocks altering comparative advantage, and substantial price volatility for natural resources.

Thirdly, it is important that FDI in natural resource sectors has a development-friendly dimension.

Due to a combination of high commodity prices and concerns about the security of supply of critical resources, in recent years there has been a global surge in investment activity – including exploration – in resource sectors. For instance, exploration and development expenditure by the 70 largest global companies in the oil sector increased from US\$ 315 billion in 2007 to US\$ 480 billion in 2011.

While resource abundance unambiguously increases FDI in resource sectors, its effect on overall FDI is less clear, with some studies arguing that resource-based FDI displaces non-resource-based FDI. A potential risk is that resource-based FDI is very capital intensive and leads to fewer beneficial spillover effects into the non-resource sectors of the host economy.

Fourthly, social and environmental issues are likely to be major concerns.

There is a positive correlation between natural resource abundance and inequality, while the correlation between natural resource abundance and environmental performance is negative. However, both correlations lose statistical significance when other country specific circumstances and global business cycles are taken into account.

Tariffs in the natural resources sector are generally lower than for overall merchandise trade, while export restrictions are more prevalent than in other sectors.

Tariffs are very low in the mining and fuels sectors. In the mining sector (but not in fuels) there is evidence of tariff escalation (higher import duties are imposed on semi-processed products than on raw materials) in developed countries, which represent the biggest markets for developing country exporters.

Available data on export restrictions suggest that, on average, 5 per cent of total world trade is covered by export taxes, and that 11 per cent of world trade in natural resources is covered by export taxes. Export taxes accounted for approximately half of the 5,000 restrictions applied by 57 countries between 2009 and 2012 collected in a recent OECD database.

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E. Increased synchronization and globalization of macroeconomic shocks

In 2008, despite suffering the greatest economic downturn since the 1930s, the world did not see a repeat of the wholesale protectionism which had marked that previous era. Among other explanations, the existence of a set of multilateral trade rules was a major reason for this.

Macroeconomic volatility is damaging for development because it can reduce economic growth and unfavourably affect the distribution of income.

Developing countries as a group exhibit more macroeconomic volatility than developed countries. The principal, but not the only channel, through which volatility cuts growth is by lowering the pace of capital accumulation, because it makes the returns on investment in human and physical capital more uncertain. The sources of volatility in developing countries can be broken down into domestic factors (the economic structure – particularly the supply side – institutions etc.) and external factors (the openness of a country and its integration with the global economy).

Trade may be a transmitter of shocks but also a source of diversification.

Countries with closer trade links tend to have more tightly correlated business cycles, suggesting that trade acts as

a transmission mechanism of country-specific shocks. In the context of the recent 2008-09 crisis, some have argued that trade was a major channel of transmission that made the crisis global. Others have underlined the role of global value chains and the so-called “bullwhip effect”, which refers to how small changes in final demand can cause a big change in the demand for intermediate goods along the value chain, including through inventory adjustment effects.

However, trade openness can also reduce volatility. If shocks are largely domestic in nature, trade becomes a source of diversification. Similarly, when a country has multiple trading partners, a domestic recession or a recession in any one of its trading partners translates into a smaller demand shock for its producers than when trade links are limited.

There are more robust findings for the relationship between macroeconomic volatility and the structure of a country's exports. If exports are concentrated in a narrow range of primary commodities, terms of trade shocks typically have a significant impact on the volatility of aggregate output.

Since the mid-1990s, the “great moderation” has extended to developing countries.

Another feature of macroeconomic volatility in developing countries is its long-term decline since the mid-1990s, although it increased again with the global crisis. This pattern is consistent with the “great moderation”, which describes reductions in output and inflation volatility in the G-7 countries that began around the same time. It turns out that the great moderation extended to developing countries as well, a result that may not be all that surprising given that developed countries are major export markets and principal sources of finance for developing countries.

The global crisis highlighted the importance of a coordinated international response to such global shocks.

The 2008-09 trade collapse and recovery revealed the dependency of developing and emerging economies on cyclical developments originating in large developed economies. The synchronization of downswings and upswings across the world illustrated the strong interconnectedness of economies through trade and financial links, in particular the role of supply chains in the propagation of shocks and the drying up of trade finance.

Given the above-mentioned links and their weight in world output and trade, developing economies have to be part of any coordinated policy response, be it on the fiscal, monetary or trade policy side. This will remain one

of the important lessons of the crisis response led by the G-20.

Low-income countries have been on the receiving end of the global economic shock, despite having little or no responsibility for the origins of the crisis. They suffered from knock-on effects of the financial crisis – for example, in the form of reduced trade finance availability, reduced income from remittances of workers living abroad, or lower demand for raw materials and commodities. However, macroeconomic buffers built up prior to the crisis helped them to mitigate the shock.

Since the crisis, developing market economies have been able to recover appreciable rates of growth, in part due to the continuation of their internationalization. The rebound of their exports has been faster than that of developed countries thanks to higher demand in developing countries themselves. Low-income countries, however, remain vulnerable to a reversal of the commodity cycle and still see their internationalization slowed by significant supply-side constraints.

The protectionist response to the crisis has been muted.

Trade theorists have argued that levels of protection should move in a countercyclical fashion to economic activity. There is empirical support for the countercyclical behaviour of protectionism, particularly in the case of trade remedies although this evidence does not go unchallenged.

It is striking then that the economic crisis of 2008-09 did not trigger a protectionist surge by either developed or developing countries bearing resemblance to the experience during the Great Depression of the 1930s or even to predictions based on countries' reactions to previous business cycles. Academic studies and information contained in the WTO's monitoring database confirm that protectionism remained muted. Furthermore, trade-restrictive measures only provide half of the story since many developing countries also simultaneously lowered trade barriers.

Possible explanations for the muted protectionist response include the existence of trade rules, the effectiveness of monitoring efforts by the WTO, countries' anticipation of the self-harming impacts of protectionism in light of participation in global value chains, and international coordination of macroeconomic policies.

The first explanation why protectionism did not materialize is that countries have an aversion to risk or

uncertainty. This uncertainty is greater during times of economic volatility and made worse if there are no restraints on the behaviour of trade partners. Thus, governments have more to gain by sticking to a trade agreement when the economic environment becomes more volatile.

Secondly, careful monitoring of trade-restrictive measures, including through the WTO, was effective although it remains possible that governments – intent on raising barriers to trade – may to a limited extent have used other measures with similar effects (“policy substitution”).

Thirdly, there is no evidence in hindsight that economies which took a more restrictive stance performed better than those which took fewer trade-restrictive measures. To the extent that policymakers could anticipate such an outcome – for instance by knowing from conversations with stakeholders that in global value chains a country's exports depend very strongly on availability of imports – this may have also discouraged protectionist action.

Last but not least, countries' use of macroeconomic policies limited the need to use trade policy to manage adverse impact on incomes and jobs.

The internationally coordinated macroeconomic policy response was very effective, also because it could draw on substantial resources. This suggests that the consequences of the crisis – and potentially protectionism – could have been much worse with less favourable initial conditions.

Countries addressed the crisis through coordinated expansionary fiscal and monetary policies on an unprecedented scale. A salient feature of the fiscal policy response was the enormous assistance given to the financial sector. There was a huge difference in the amount of support extended by developed G-20 countries and that provided by G-20 developing countries. The amount pledged by the developed G-20 countries to the financial sector was estimated to equal 11 per cent of their GDP. On none of the support measures did the amount pledged by G-20 developing countries reach 1 per cent of their GDP.

Assistance to the financial sector was necessary to avoid a financial collapse but it may also have had trade-distorting consequences.

To the extent that the financial sector bailout prevented a financial meltdown and shored up aggregate demand, it helped sustain developed countries' demand for imports, including those originating from developing countries. Nevertheless, there is evidence that it led to

reductions in cross-border lending. Furthermore, since financial conditions appear to be highly correlated with export performance, the bailouts would have had the effect of sustaining developed countries' exports more than in their absence, at the expense perhaps of exports originating from developing countries.

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F. The WTO and developing countries

The WTO has underpinned the progress made by many developing countries by allowing them to take advantage of, adapt to and mitigate risks arising from the four trends identified in this report. It has done so through binding commitments, flexibilities, technical assistance, and its institutional infrastructure.

The strong economic performance of many developing countries has been associated with reductions in their levels of protection, a significant part undertaken in the context of implementing WTO commitments. This has been particularly apparent in the case of countries acceding to the WTO. Flexibilities allowed in WTO rules, specifically through preferential access, also played a role in buoying the economic performance of the poorest countries.

Integration of developing countries into GVCs has been made possible by the creation of a predictable business environment and the reduction of trade barriers and of trade costs. These have in turn been aided by WTO commitments, not only in goods but importantly also in services, given the large role the latter plays in GVCs. The new Trade Facilitation Agreement signed at the Ninth WTO Ministerial Conference, when implemented, would provide further momentum for reducing trade costs globally, helping expand the participation of developing countries in value chains. Technical assistance can play a vital role in this process, by directing Aid for Trade resources to assist implementation of trade facilitation.

High commodity prices have been beneficial for many developing country exporters. They can, at the same time, pose a challenge for others, particularly net food importers. WTO agreements have mechanisms that help mitigate the problem and members are presently negotiating flexibilities like those provided by the Bali Decision on Public Stockholding for Food Security Purposes. Further progress on the Doha Development Agenda could help realize the full potential of the agriculture sector to contribute to development.

Finally, the WTO has helped safeguard the economic gains achieved by many developing countries despite

the world suffering from the biggest economic crisis of the past seventy years. The WTO helped contain protectionism through its system of trade rules and the effectiveness of its monitoring efforts.

Economic literature supports the view that commitments under the WTO are important for developing countries to promote their trade and development. At the same time, it provides arguments why developing countries need flexibilities because their economic circumstances can hamper their ability to implement obligations.

Commitments are key tenets of international trade agreements. Several studies have shown the empirical relevance of the GATT/WTO in this regard, including by fostering economic growth in developing countries. One study has found that countries undertaking substantial reforms in the context of WTO accessions have grown about 2.5 per cent faster for several years thereafter.

At the same time, in order for a trade agreement to be viable, the possibility to suspend certain commitments temporarily under specific conditions is important – a flexibility available to all participating countries. Flexibility is required not for its own sake, but in order to allow members to the trade agreement to make deeper commitments.

In the case of developing countries, economic theory provides a number of reasons related to market failures typical in those economies that explain why special and differential treatment (S&D) can be useful as long as these market failures persist. Developing countries' small economic size has been a long-standing rationale for non-reciprocity and preferential market access in developed countries. Higher levels of uncertainty, imperfect financial markets or insufficient governmental resources are other constraints that may make it harder for developing countries to adjust quickly to open trade. S&D aims at allowing developing countries to take and implement commitments, as well as pursue trade opportunities, in a manner and pace that reflects the economic conditions that they confront.

Developing countries can take advantage of many forms of special and differential treatment.

One of the principal ways in which developing countries have been accorded special and differential treatment in the GATT and the WTO is through less-than-full reciprocity in commitments in the context of negotiations on market access, in particular in tariff reduction negotiations. Numerous provisions in the WTO Agreement seek to address the resource limitations of developing countries in undertaking certain

commitments by allowing transition periods for the implementation of commitments or by calling for the provision of technical assistance. In addition, of course, developing countries benefit from rules that are applicable to all WTO members.

The WTO provides specific fora and institutions aimed at developing countries.

The Committee on Trade and Development is the focal point on development issues in the WTO. It plays an important role by considering issues raised by developing countries and specific groups of developing countries (small economies, LDCs), by promoting transparency in preferential tariff treatment and regional trade agreements, and overseeing implementation of WTO trade-related technical assistance. For LDCs, trade policy reviews play an additional important role in identifying of trade capacity development needs, apart from their role in providing transparency over policy regimes.

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G. Conclusions

The WTO can further contribute to the achievement of its development objective through the successful conclusion of the Doha Development Agenda. The agreement reached in the Bali Ministerial Conference in December 2013 is a positive step in this direction and offers new opportunities for developing countries.

This report shows how integration into the global economy has gone hand-in-hand with the successful development stories of the last two decades. It also shows that global value chains can contribute to integration into the world economy, how increasing

prices have offered commodity-exporting countries the opportunity to increase GDP through higher export revenues and the role the WTO has played in preserving the global trading system from protectionist reactions following the crisis.

In the context of the four trends of the last decade, the report also shows that remaining obstacles for developing countries to further benefit from the trading system are significant. Lack of skills, poor infrastructure, the high cost of meeting standards, and high levels of protection against products of interest to developing countries are among these. The report also stresses how initiatives such as Aid for Trade can help developing countries participate effectively in global markets.

The Doha Round is about creating the conditions for the development of all countries. In particular, it aims to expand the opportunities for developing countries to benefit from effective inclusion in the global trading system. The decisions reached in Bali are important contributions of the multilateral trading system to development.

Trade and an open rules-based multilateral trading system have central roles to play in addressing the development challenges of a post-2015 world.

The four trends of the last 10 years and the history of development show that trade is one of the key enablers of development. Trade has played a central role in lifting millions of people out of poverty in recent years and helped to achieve many of the UN millennium development goals (MDGs). The WTO and its rules should be seen as an integral part of the enabling environment for realizing any post-2015 development agenda.

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I. The world economy and trade in 2013 and early 2014

Growth in world merchandise trade remained subdued in 2013 at 2.2 per cent, nearly identical to the previous year's increase of 2.3 per cent. The increases in both 2012 and 2013 were less than the 20-year average of 5.3 per cent in 1993–2013, and were also well below the 6.0 per cent average for the 20 years preceding the 2008–09 crisis. The volume of world merchandise trade continued to climb slowly in the opening months of 2014, with an increase of 2.1 per cent in the first quarter compared with the same period in 2013. The increase for the year as a whole is expected to be greater than in 2013 as the global economy picks up momentum.

1. Introduction

The sluggish pace of trade growth in 2013 was due to a combination of factors, including low import demand in developed economies (-0.3 per cent) and moderate import growth in developing economies (4.7 per cent). On the export side, both developed and developing economies recorded only small increases (1.5 per cent and 3.6 per cent, respectively).

Several factors contributed to the weakness of trade and output in 2013, including the lingering impact of the recession in the European Union, high unemployment in euro area economies (Germany being a notable exception) and uncertainty about the timing of the Federal Reserve's winding down of its monetary stimulus in the United States. The latter contributed to financial volatility in developing economies in the second half of 2013, particularly in certain emerging economies with large current account imbalances.

The estimate of 2.2 per cent for world trade growth in 2013 refers to the average of merchandise exports and imports in volume terms, adjusted to account for differences in inflation and exchange rates across countries. This figure is slightly lower than the WTO's forecast of 2.5 per cent growth for 2013. The main reason for this lower rate of growth was a stronger than anticipated decline in developing economies' trade flows in the second half of last year. For the second consecutive year, world trade has grown at roughly the same rate as world gross domestic product (GDP) at market exchange rates, rather than twice as fast, as is normally the case (see Figure 1).

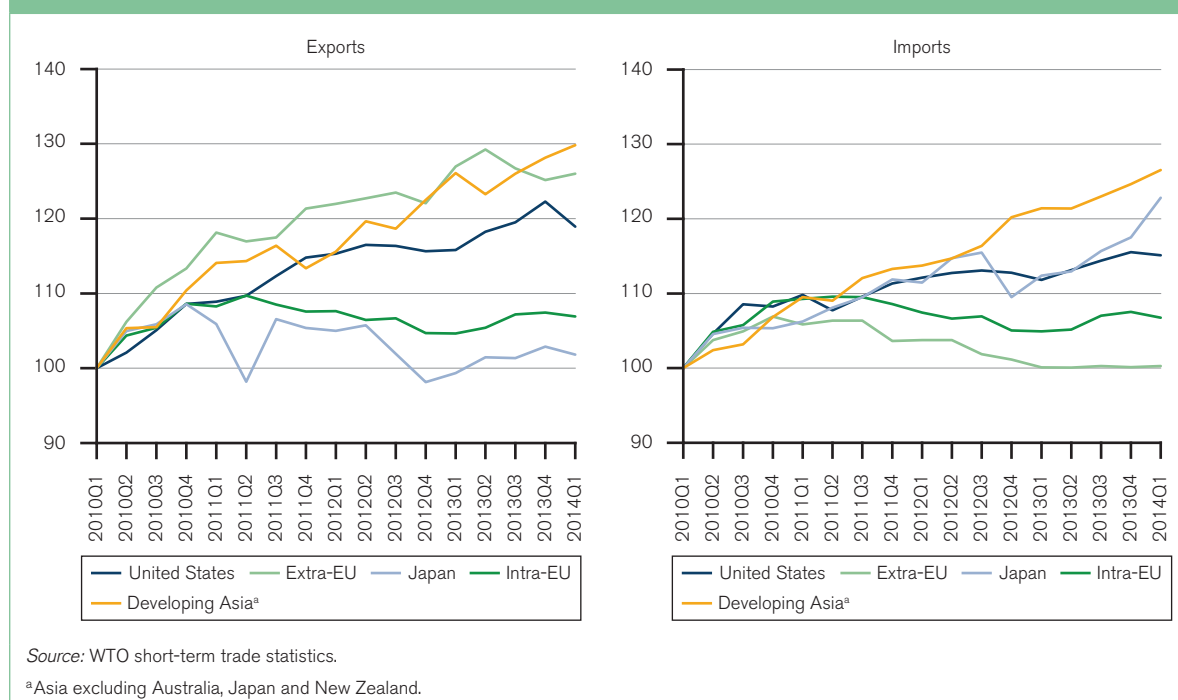
Economic data showed a continuing sluggishness in the economic activity and trade in developed countries in early 2014, despite positive forward-looking indicators. Preliminary GDP figures for the United States showed output stagnating at close to zero in the first quarter of 2014 but this was later revised to a decline of 2.1 per cent, which many analysts attributed to the harsh winter weather. Despite this drop in output, US unemployment fell to 6.3 per cent in April, allowing the Federal Reserve to proceed with its planned "tapering" of its third round of quantitative easing. Output in the European Union increased by 1.3 per cent, with activity stronger in Germany and the United Kingdom, and weaker in France, Italy and other euro area economies. The outlook for the European Union and the euro area improved: in April, purchasing managers' indices from Markit Economics, an independent, global provider of business surveys, indicated the fastest pace of expansion in three years. Japan's GDP growth was surprisingly strong in the first quarter of 2014, with an annualized increase of 5.9 per cent. Slower growth had been expected due to the introduction of higher sales taxes. Finally, a general slowing of economic activity and trade was observed in developing economies in the first quarter. The economic slowdown in China in the first quarter showed signs of turning around in the second quarter according to China's official manufacturing Purchasing Managers Index (PMI), issued by the China Federation of Logistics and Purchasing and the National Bureau of Statistics, which rose to 50.8 in May, compared with 50.4 in April.¹

In 2013, the value of world merchandise exports rose 2.0 per cent to US\$ 18.8 trillion. This growth rate was slightly less than the WTO's export volume growth

Figure 1: Growth in volume of world merchandise exports and GDP, 2005–13 (annual percentage change)



Figure 2: Quarterly merchandise trade of selected economies, 2010Q1–2014Q1
(seasonally adjusted volume indices, 2010Q1=100)



estimate for the year (+2.4 per cent), which implies that export prices declined slightly from one year to the next. Meanwhile, the value of world commercial services exports rose 5.6 per cent to US\$ 4.6 trillion.

Some risk factors for developed economies receded considerably in the early months of 2014, including the sovereign debt crisis in Europe and fiscal brinksmanship between the executive and legislative branches of government in the United States. Meanwhile, developing economies became the focus of several risks, including large current account deficits, currency crises, over-investment in productive capacity, and rebalancing economies to rely more on domestic consumption and less on external demand.

Geopolitical tensions introduced significant risks in 2013 and early 2014. Civil conflicts and territorial disputes in the Middle East, Asia and Eastern Europe could provoke higher energy prices and disrupt trade flows if they escalate.

2. Trade developments

(a) Additional perspectives on trade

After a flat first quarter, US exports grew steadily in 2013 before faltering in the first quarter of 2014, according to seasonally adjusted merchandise trade volume indices jointly produced by the WTO and the United Nations Conference on Trade and Development (UNCTAD) (see also Figure 2). In contrast, exports from the European Union to the rest of the world (i.e. extra-EU exports) were strongest in the first quarter of 2013, weakened over the

course of the year, then rose slightly in the first quarter of 2014. Trade between EU countries (i.e. intra-EU exports) rallied in the third quarter but stalled thereafter. Starting from a low base, Japan's exports increased steadily in 2013 before easing in the first quarter of 2014. Seasonally adjusted exports from developing Asia alternated between negative and positive growth in 2013 before entering 2014 on a mildly positive trajectory, although unadjusted figures were more negative.

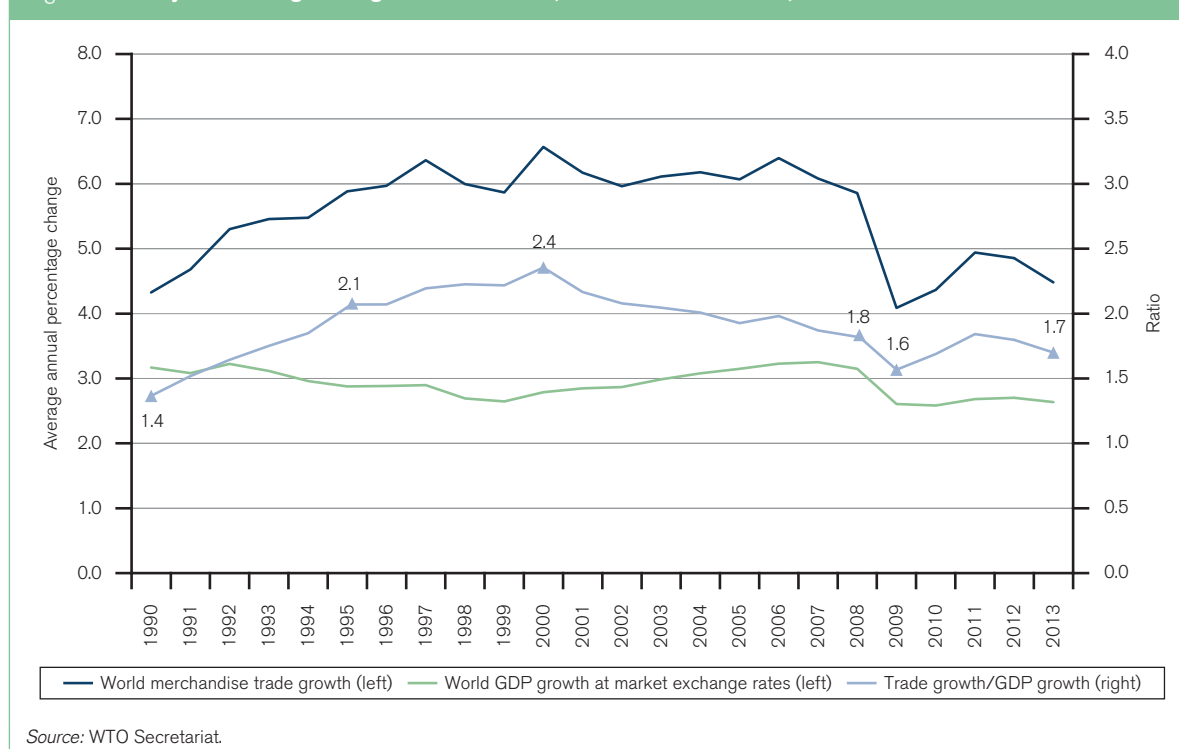
Overall, export volumes in the second half of 2013 increased for the United States (3.3 per cent), intra-EU (2.0 per cent), Japan (1.2 per cent) and developing Asia (1.9 per cent), while extra-EU was slightly negative (-1.5 per cent).

On the import side, extra-EU trade remained depressed throughout the year, sapping global demand. The trend for intra-EU imports was the same as for intra-EU exports. Meanwhile, imports from the United States, Japan and developing Asia generally rose (see Appendix Figure 1).

In the second half of 2013, import demand increased in major markets (+2.2 per cent for the United States, +1.8 per cent for intra-EU, +0.2 per cent for extra-EU, +3.3 per cent for Japan and +2.0 per cent in developing Asia).

Quarterly exports and imports of developing economies only managed small increases in the second half of last year, as exports and imports respectively grew around 0.5 per cent and 1 per cent between the second and fourth quarters. South and Central America's trade flows actually contracted (the region's exports declined by 3 per cent and its imports fell by 5 per cent during this period), and

Figure 3: Ten-year moving average of world trade, GDP and trade/GDP, 1990–2013



other natural-resource-exporting regions were hit hard as well. The weakness in developing regions was matched by equally slow trade growth in developed economies.

Extra-EU import demand was consistently weak throughout 2013. Signs of a turnaround in intra-EU trade began to appear in the middle of the year but trailed off towards the end. Seasonally adjusted extra-EU merchandise imports were flat in the first quarter, both year-on-year and quarter-on-quarter. Meanwhile, intra-EU imports were up 1.7 per cent year-on-year, but down 0.7 per cent quarter-on-quarter. EU merchandise imports represent 32 per cent of world imports including intra-EU trade, and 15 per cent of world imports excluding it. Overall, world trade rose at a rate of 1 per cent in the first quarter, equivalent to a 2 per cent annual rate. Export growth was -0.5 per cent for developed economies and 1.6 per cent for developing economies plus the Commonwealth of Independent States (CIS). On the import side, developed economies were slightly negative (-0.1 per cent) while developing economies increased by 1.3 per cent.

For the second time in two years in 2013, merchandise trade grew more slowly than might have been expected, given the growth of the world economy as measured by GDP. Although trade can grow faster or more slowly than output in any given year, since the 1990s it has tended to grow about twice as fast as GDP when measured at market exchange rates. In 2012, trade growth fell to the same rate as GDP, and they remained at equal rates in 2013, prompting analysts to question whether the previous relationship would continue to hold.

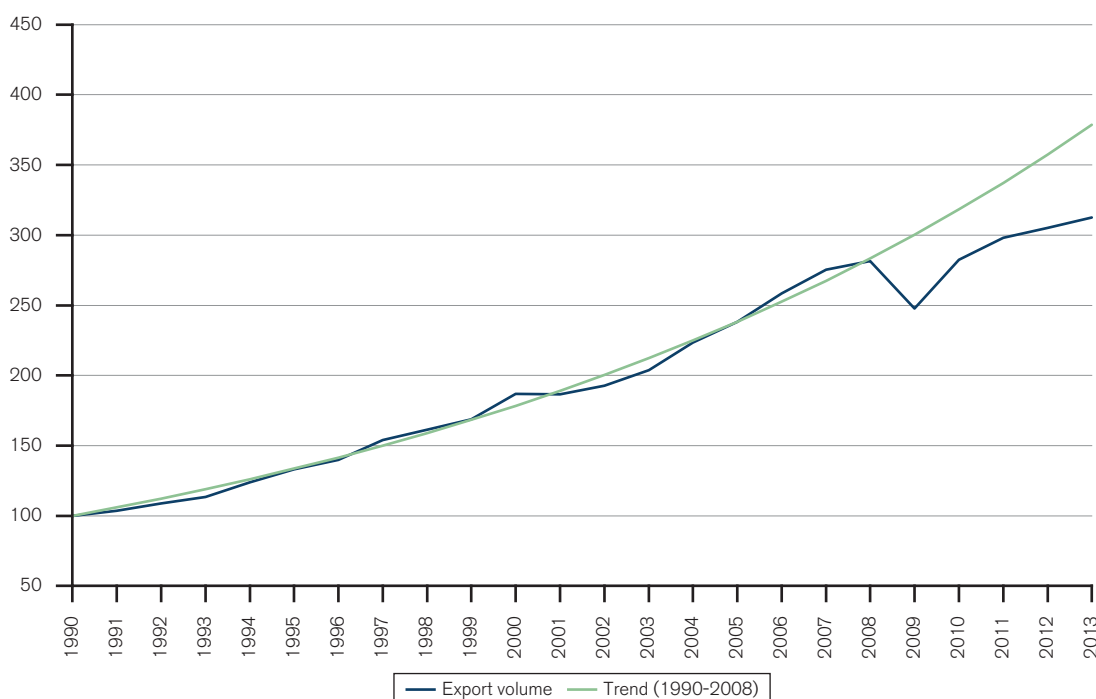
The ratio of ten-year moving averages of world trade growth and world GDP growth peaked at 2.4 in 2000 (see Figure 3) but fell to 1.7 in 2013. Historically, trade has tended to contract when world output has slowed, and to rebound sharply afterwards. Structural factors (e.g. the spread of supply chains, the product composition of world trade, subtle protectionism, etc.) may have played a role in the declining ratio. However, given the number and severity of global slowdowns in recent years, it may simply be a cyclical phenomenon. It is too soon to say whether a 2:1 relationship between trade growth and GDP growth will return once the global recovery gains traction.

World merchandise trade growth of 2.2 per cent in 2013 is below the average rate of 5.3 per cent for the last 20 years (1993–2013) and the pre-crisis average rate of 6.0 per cent for 1990–2008 (see Figure 4). In addition to creating a permanent shift downward in the level of trade, the global recession of 2008–09 may have reduced its average growth rate as well. The average rate of trade expansion in the three years since 2010 has been 3.3 per cent.

The divergence between the pre-crisis trend for world trade and current levels has continued to widen. World trade was 17.2 per cent below the trend level in 2013, making it almost as far below the pre-crisis trend as it was in 2009, the period known as the “great trade collapse” (see Figure 5).

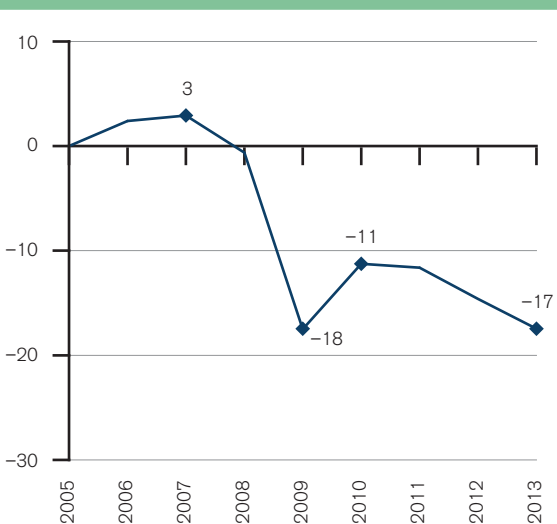
In 2012, the EU recession had a significant dampening effect on trade volumes due to the large share of the

Figure 4: Volume of world merchandise exports, 1990–2013 (indices, 1990=100)



Source: WTO Secretariat.

Figure 5: Deviation of world merchandise export volumes from pre-crisis trends, 2005–13 (per cent)



Source: WTO Secretariat.

entity and intra-EU trade was ignored. A similar calculation for 2013 does not result in a substantially higher growth rate (2.2 per cent for world trade excluding intra-EU trade, compared with 2.1 per cent including it) because, although trade within the European Union remained depressed in 2013, it did not decline as sharply as in 2012. However, if EU economies recover faster than expected and trade between them is revitalized, this could cause world trade to rise more than is currently expected.

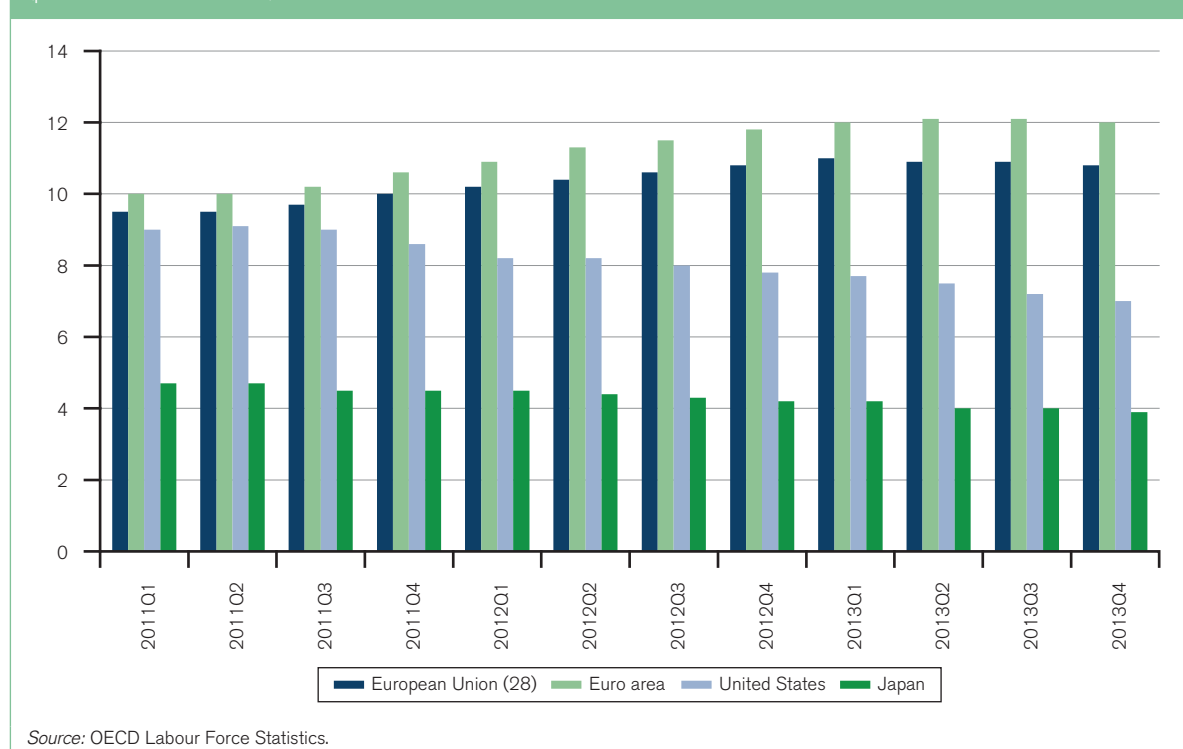
The high level of joblessness in the euro area could act as a brake on demand for global imports for some time since unemployment rates tend to decline only gradually. The recent experience of the United States provides an indication of how much time might be required. From its peak at just under 10 per cent of the workforce in March 2010, it took 44 months – more than three and a half years – for the US unemployment rate to fall to 7 per cent (see Figure 6). Until the EU rate comes down, European demand will probably only provide marginal support for stronger growth in global trade.

(b) Economic growth

European Union in world trade (around one-third for both exports and imports) and to the fact that trade between EU countries is counted in world trade totals. In the 2013 *World Trade Report*, we estimated that growth in world trade would have been more than a percentage point higher if the European Union was treated as a single

Output trends in developed economies were mixed in 2013. The 2012 recession in the European Union, which was particularly acute in the euro area, extended into 2013 with a 0.2 per cent contraction in EU GDP in the first quarter (annualized rate) according to data from OECD (Organisation for Economic Co-operation

Figure 6: Unemployment rates in the European Union (28), the euro area, the United States and Japan, 2011Q1–2013Q4
(per cent of labour force)



and Development) quarterly national accounts. Growth remained positive but low for the rest of the year, ranging between 1.2 per cent and 1.7 per cent annualized.

In contrast to this performance, the United States saw annualized quarterly growth reach 4.1 per cent in the third quarter, and roughly 2.5 per cent in both the second and fourth quarters. After some delay, the US Federal Reserve announced in December of last year that it would begin to wind down its third quantitative easing programme of bond purchases, beginning in January. Initial market reaction was muted but after-shocks were felt in developing economies soon afterwards in the form of strong exchange rate fluctuations and equity market volatility.

Japan's experiment with expanded fiscal and monetary stimulus known as "Abenomics" (referring to the economic policies advocated by Japanese Prime Minister Shinzo Abe since the December 2012 general election) produced stronger growth in the first two quarters of 2013, but activity slowed in the second half of the year, falling to less than 1 per cent per quarter, annualized.

For developed economies as a whole, GDP growth for 2013 was 1.1 per cent, lower than the 1.3 per cent rate recorded in 2012 and the 1.5 per cent expansion of 2011 (see Table 1).

Developing economies' output slowed in 2013 as financial volatility hit some countries harder than others. Developing

economies, including the CIS, saw their collective GDP growth drop to 4.4 per cent from 4.5 per cent in 2012 and 5.7 per cent in 2011 (see Table 1).

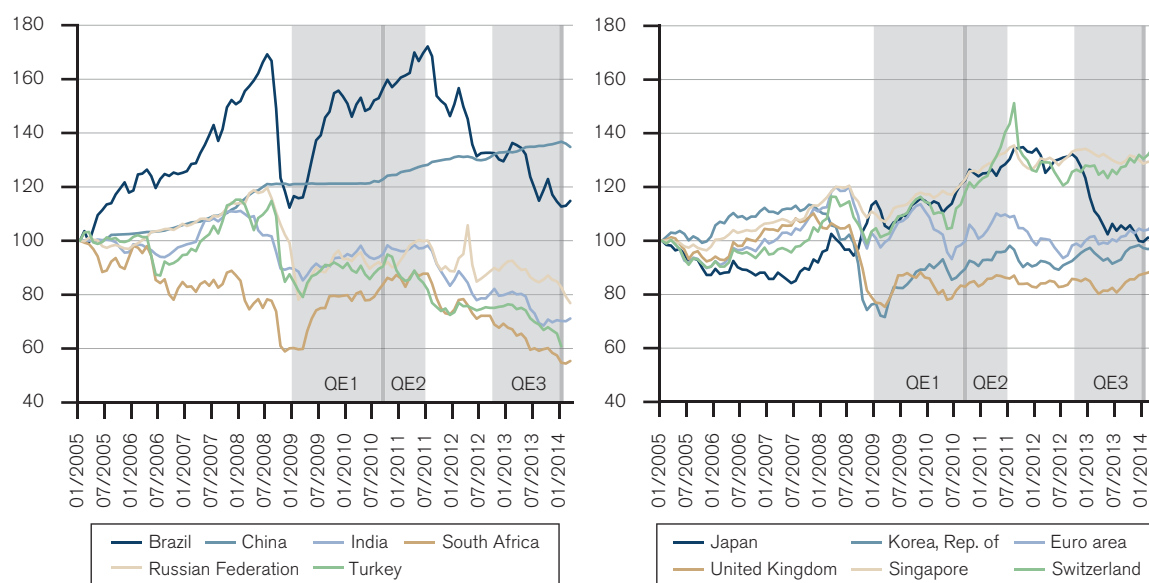
The rise in financial market volatility was most keenly felt in emerging markets with large current account deficits. This is especially true of India, where output growth see-sawed from 2.6 per cent in the second quarter of 2013 to 7.2 per cent in the third, then back to 3.9 per cent in the fourth (all rates annualized, sourced from the OECD). With financial markets anticipating, in mid-2013, a tapering in the third quarter, capital flows put pressure on emerging market currencies, such as India's rupee, which suffered a depreciation of 14.5 per cent between April and September (see Figure 7). Other emerging market currencies also depreciated significantly against the dollar, including the Argentinean peso, the Turkish lira, the Indonesian rupiah and the South African rand. Political upheaval contributed further to market turbulence in Turkey and Thailand.

In a potentially significant development, China has given its currency greater leeway to fluctuate against other currencies, and monetary authorities allowed the renminbi to depreciate by 1.5 per cent against the dollar between January and March. What this portends for the future conduct of Chinese monetary policy remains to be seen, but Chinese authorities have indicated a desire to gradually move their currency towards greater convertibility.

Table 1: GDP and merchandise trade by region, 2011–13
(annual percentage change)

	GDP			Exports			Imports		
	2011	2012	2013	2011	2012	2013	2011	2012	2013
World	2.8	2.3	2.2	5.5	2.4	2.5	5.3	2.1	1.9
North America	2.0	2.8	1.8	6.6	4.4	2.8	4.4	3.1	1.2
United States	1.8	2.8	1.9	7.3	3.8	2.6	3.8	2.8	0.8
South and Central America^a	4.5	2.7	3.0	6.8	0.7	1.4	13.0	2.3	3.1
Europe	1.9	-0.1	0.3	5.6	0.8	1.5	3.2	-1.8	-0.5
European Union (28)	1.7	-0.3	0.1	5.8	0.4	1.7	2.8	-1.9	-0.9
Commonwealth of Independent States (CIS)	4.9	3.5	2.0	1.6	0.9	0.8	17.3	6.8	-1.3
Africa	1.1	5.7	3.8	-8.2	6.5	-2.4	5.1	12.9	4.1
Middle East	5.7	3.4	3.0	7.8	5.2	1.9	4.5	10.5	6.2
Asia	4.1	4.0	4.2	6.4	2.8	4.7	6.6	3.7	4.5
China	7.7	7.7	7.5	8.8	6.2	7.7	8.8	3.6	9.9
Japan	1.4	1.6	1.5	-0.6	-1.0	-1.9	4.3	3.8	0.5
India	3.2	4.4	5.4	15.0	0.2	7.4	9.7	6.8	-3.0
Newly industrialized economies (4) ^b	4.1	1.8	2.7	7.7	1.4	3.5	2.7	1.4	3.4
Memo: Developed economies	1.5	1.3	1.1	5.2	1.1	1.5	3.4	0.0	-0.3
Memo: Developing and CIS	5.7	4.5	4.4	5.8	3.8	3.6	8.0	5.1	4.7

Source: WTO Secretariat.

^aIncludes the Caribbean.^bHong Kong, China; Republic of Korea; Singapore; and Chinese Taipei.Figure 7: US dollar exchange rates against currencies of selected countries, January 2005 – March 2014
(indices of US\$ per unit of national currency, 1 January 2005=100)

Source: Federal Reserve Bank of St. Louis except for Russian Federation and Turkey, which are sourced from IMF International Financial Statistics.

Note: "QE" stands for "quantitative easing".

Table 2: World prices of selected primary commodities, 2000–13
(annual percentage change and US\$ per barrel)

	2011	2012	2013	2000-13	2005-13
All commodities	26	-3	-2	9	8
Metals	14	-17	-4	9	8
Food	20	-2	1	6	7
Beverages ^a	17	-19	-12	5	5
Agricultural raw materials	23	-13	2	3	4
Energy	32	1	-2	10	8
Memo: Crude oil price in US\$/barrel ^b	104	105	104	63	82

Source: IMF International Financial Statistics.

^aComprises coffee, cocoa beans and tea.

^bAverage of Brent, Dubai, and West Texas Intermediate.

Asia recorded the fastest regional GDP growth in 2013, at 4.2 per cent (almost equal to its growth in the previous two years). The next-fastest growth was recorded by Africa (3.8 per cent), the Middle East (3.0 per cent), South and Central America (3.0 per cent), the CIS (2.0 per cent), North America (1.8 per cent) and Europe (0.3 per cent).

(c) Merchandise trade in volume (i.e. real) terms

World merchandise trade, as measured by the average of exports and imports, rose 2.2 per cent in volume terms in 2013, but the difference between exports and imports was relatively large (2.5 per cent growth for exports, 1.9 per cent for imports). Some degree of divergence between these figures is normal due to imperfect data recording and may be narrowed by future revisions.

Exports of developed economies grew more slowly than the world average, at 1.5 per cent, while shipments from developing countries grew faster than average, at 3.6 per cent. On the import side, developed economies recorded a small decline of -0.3 per cent, while developing economies and the CIS increased by 4.7 per cent (see Table 1).

Asia's exports grew faster than any other region's last year, with a 4.7 per cent rise. It was followed by North America (2.8 per cent), the Middle East (1.9 per cent), Europe (1.5 per cent), South and Central America (1.4 per cent), the CIS (0.8 per cent) and Africa (-2.4 per cent). Asia's export growth was held back by Japan, which saw its shipments to the rest of the world decline by 1.9 per cent. Meanwhile, exports from China and India increased by 7.7 per cent and 7.4 per cent, respectively. These performances were better than in 2012 but still relatively weak by recent historical standards. The negative figure for Africa was due to sharp reductions in shipments from petroleum-exporting countries, including Libya (-28 per cent), Nigeria (-8.4 per cent) and Algeria (-5.8 per cent).

The fastest growing region for imports was the Middle East (6.2 per cent), followed by Asia (4.5 per cent), Africa (4.1 per cent), South and Central America (3.1 per cent), North America (1.2 per cent), Europe (-0.5 per cent), and the CIS (-1.3 per cent). India suffered a sharp drop of 3.0 per cent in its imports as a result of its economic slowdown, but China's purchases from abroad jumped nearly 10 per cent.

Africa was able to increase its imports even as its exports fell in 2013 due to continued high prices for primary commodities. Although prices for metals, raw materials and beverages (including coffee, tea and cocoa) have fallen in the last two years, oil prices have been remarkably steady, rising 1 per cent in 2012 and falling 2 per cent in 2013. Prices for primary commodities in general only fell 2 per cent last year (see Table 2).

(d) Merchandise and commercial services trade in value (i.e. dollar) terms

The dollar value of world merchandise exports in 2013 was US\$ 18.8 trillion, 2 per cent higher than in 2012. This growth rate was nearly equal to the growth of exports in volume terms since prices of traded goods, as measured by unit values, were nearly unchanged from one year to the next. The average growth rate of export values in the post-2005 period remained stable at 8 per cent (see Table 3). China became the largest trader in 2013, as measured by the sum of exports and imports (11.0 per cent of the world total), overtaking the United States (10.4 per cent). However, if the European Union is treated as a single entity its share in world exports plus imports, excluding intra-EU trade, remains the largest, at 15.1 per cent compared with China's 13.8 per cent.

World exports of commercial services in 2013 reached US\$ 4.6 trillion, with a growth rate of 6 per cent. The growth rate for transport services in 2013 was below this, at 2 per cent, while travel services grew at 7 per cent and other commercial services grew at 6 per cent (see Table 3).

Table 3: World exports of merchandise and commercial services, 2005–13
(US\$ billion and annual percentage change)

	Value	Annual % change			
	2013	2011	2012	2013	2005-13
Merchandise	18,816	20	0	2	8
Commercial services	4,645	12	2	6	8
Transport	905	9	1	2	6
Travel	1,185	12	4	7	7
Other commercial services, of which:	2,550	14	2	6	9
Communications services	120	9	5	9	9
Construction	105	7	0	-2	8
Insurance services	105	9	-1	-2	10
Financial services	335	12	-3	9	8
Computer and information services	285	17	5	10	14
Royalties and licence fees	310	14	1	6	9
Other business services	1,245	15	4	6	9
Personal, cultural and recreational services	40	17	2	8	8
Memo: Goods and commercial services (BOP)	23,255	18	1	3	8

Source: WTO and UNCTAD Secretariats.

Commercial services accounted for 20 per cent of total world trade in goods and commercial services in 2013, up 1 per cent from the 2012 share. However, traditional trade statistics, which measure gross trade flows rather than value added at various stages of production, may strongly underestimate the contribution of services to international trade.

In dollar terms, China's exports of financial services (i.e. services provided by banks and other financial intermediaries) rose 52 per cent to US\$ 3 billion in 2013, but the United States remained the top supplier with exports valued at US\$ 82 billion. Other notable changes include China displacing France to become the fourth-largest exporter of other business services (including engineering services, legal/accounting services, management consulting, advertising and trade-related services).

Some sub-categories of other commercial services grew faster than others. Computer and information services recorded the strongest growth, at 10 per cent, while construction posted the strongest decline at -2 per cent. Financial services posted the strongest recovery, from a decline of 3 per cent in 2012 to growth of 9 per cent in 2013. Communications services (including postal, courier and telecommunications services) grew at a rate of 9 per cent, and other business services (including engineering services, legal/accounting services, management consulting, advertising and trade-related services) grew by 6 per cent. Royalties and licence fees increased by 6 per cent after stagnating

in 2012. However, all sub-categories of commercial services other than financial services recorded growth rates lower than the average trend.

Appendix Tables 1 to 6 provide more detailed information on trade flows of merchandise and commercial services by region and for selected economies. They also indicate leading exporters and importers with and without trade between EU countries. There were few significant changes in world rankings last year.

China overtook Germany as the second-largest importer of commercial services, while France moved into fourth position, pushing the United Kingdom into fifth place.

Exports of commercial services (see Figure 8 and Appendix Table 2) declined sharply between 2011 and 2012 for most regions, with smaller changes (some positive, some negative) between 2012 and 2013. Imports during this period displayed a similar pattern. On both the export and import sides, growth in European services trade turned sharply negative in 2012 before rebounding into positive territory in 2013.

The strongest decelerations for commercial services were recorded by South and Central America, for both exports and imports, with Brazil responsible for much of the decline. On the export side, growth fell from 18 per cent in 2011 to 6 per cent in 2012 and 2 per cent in 2013. On the import side it dropped from 24 per cent in 2011 to 6 per cent in 2012 and 7 per cent in 2013.

Figure 8: Growth in the value of commercial services exports by region, 2011–13
(annual percentage change)



Source: WTO Secretariat.

^aIncludes the Caribbean.

(i) Merchandise trade

North America's merchandise exports rose 2.0 per cent in 2013, to US\$ 2.42 trillion (13.2 per cent of world exports) while imports remained essentially unchanged at US\$ 3.2 trillion (17.4 per cent of world imports). South and Central America's exports fell by 1.8 per cent to US\$ 736 billion (4.0 per cent) but the region's imports grew by 2.5 per cent to US\$ 773 billion (4.2 per cent). European exports rose 4.1 per cent to US\$ 6.65 trillion (36.3 per cent), the strongest growth of any region. Meanwhile, Europe's imports recorded a small increase of 1.0 per cent to US\$ 6.60 trillion (35.8 per cent).

CIS exports declined 2.6 per cent to US\$ 779 billion while imports grew by 0.5 per cent to US\$ 574 billion. The region's exports and imports respectively represented 4.3 and 3.0 per cent of world trade.

Africa's merchandise exports suffered a large decline of 5.8 per cent to US\$ 602 billion (3.3 per cent of world exports). Meanwhile, imports grew a modest 2.2 per cent to US\$ 628 billion (3.4 per cent of world imports). Middle East exports declined by 0.1 per cent to US\$ 1.35 trillion (or 7.4 per cent) and the region's imports rose by 6.1 per cent to US\$ 779 billion (4.2 per cent).

Asia's exports grew by 2.9 per cent to US\$ 6.29 trillion (34.4 per cent of the global total) in 2013. Meanwhile, imports grew by 2.1 per cent to US\$ 6.34 trillion (34.4 per cent).

The top five merchandise exporters in 2013 were China (US\$ 2.21 trillion, 11.7 per cent of world exports), the United States (US\$ 1.58 trillion, 8.4 per cent), Germany (US\$ 1.45 trillion, 7.7 per cent), Japan (US\$ 715 billion, 3.8 per cent) and the Netherlands (US\$ 672 billion, 3.6 per cent). There were no changes in the ranking among the top exporters but Japan suffered a sharp decline of 10.0 per cent in its exports.

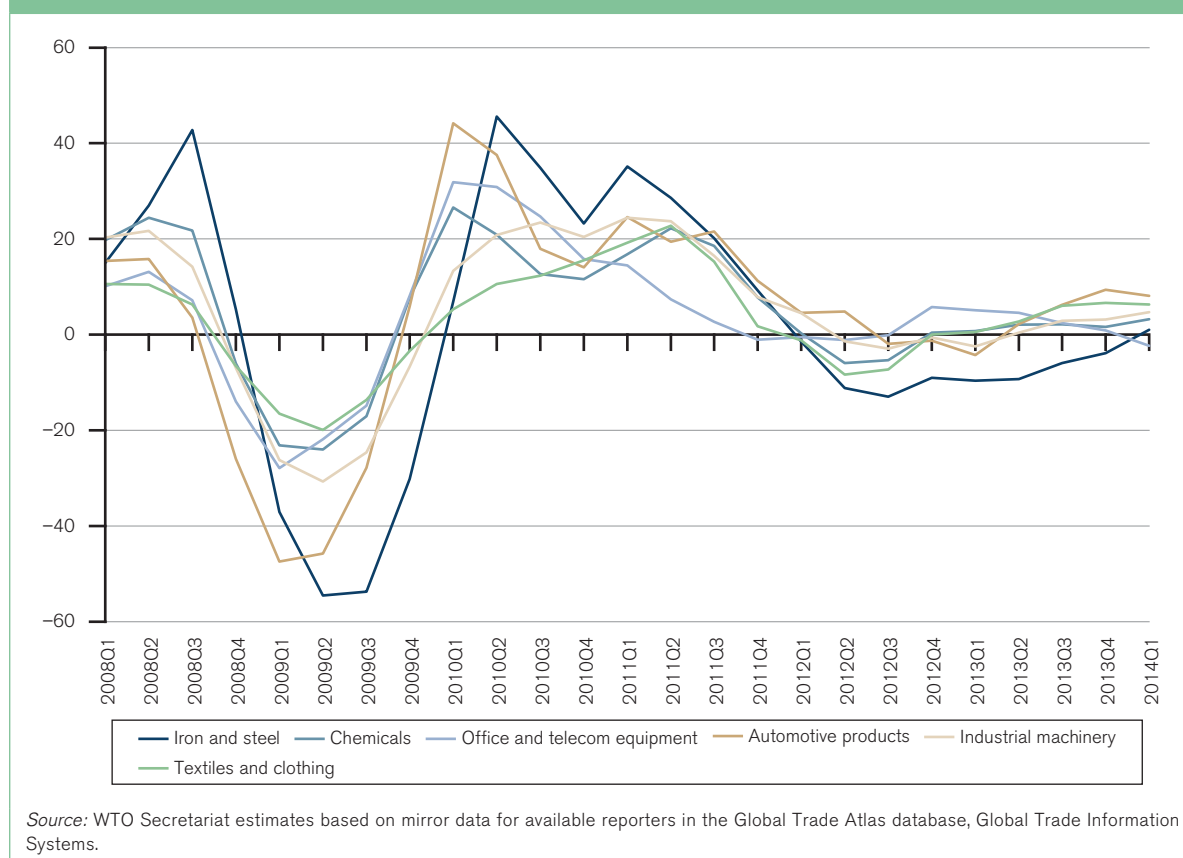
The leading importers in 2013 were the United States (US\$ 2.33 trillion, 12.3 per cent of world imports), China (US\$ 1.95 trillion, 10.3 per cent), Germany (US\$ 1.19 trillion, 6.3 per cent), Japan (US\$ 833 billion, 4.4 per cent) and France (US\$ 681 billion, 3.6 per cent). France replaced the United Kingdom at number five on the list of leading importers.

If all 28 EU members are counted as a single entity, and intra-EU trade is excluded, the leading exporters in 2013 were the European Union (US\$ 2.3 trillion, 15.3 per cent of world exports), China (14.7 per cent), the United States (10.5 per cent), Japan (4.8 per cent) and the Republic of Korea (US\$ 560 billion, 3.7 per cent). The leading importers when intra-EU trade is excluded were the United States (15.4 per cent of world imports), the European Union (US\$ 2.23 trillion, 14.8 per cent), China (12.9 per cent), Japan (5.5 per cent) and Hong Kong, China (US\$ 622 billion, 4.1 per cent).

(ii) Commercial services trade

The dollar value of world commercial services exports in 2013 was US\$ 4.6 trillion, indicating growth of

Figure 9: Quarterly world exports of manufactured goods by product, 2008Q1–2014Q1
(year-on-year percentage change in US\$ values)



5 per cent over 2012. The region with the fastest growth in exports services was the CIS with a 9 per cent increase to US\$ 115 billion. This was followed by Europe, with a 7 per cent increase (US\$ 2.17 trillion), Asia, showing a 6 per cent increase (US\$ 1.21 trillion), North America, with a 5 per cent increase (US\$ 761 billion), the Middle East, with a 4.5 per cent increase (US\$ 128 billion), South and Central America, with a 2 per cent increase (US\$ 144 billion), and Africa, which fell -3.4 per cent to US\$ 90 billion.

The top five exporters of commercial services in 2013 were the United States (US\$ 662 billion, 14.3 per cent of the world total), the United Kingdom (US\$ 293 billion, 6.3 per cent), Germany (US\$ 286 billion, 6.2 per cent), France (US\$ 236 billion, 5.1 per cent) and China (US\$ 205 billion, 4.5 per cent). There were no changes in the ranking among the top exporters, but within this group the United Kingdom posted the smallest annual growth in exports (2 per cent) while France posted the largest annual growth (10 per cent).

The five leading importers of commercial services were the United States (US\$ 432 billion, 9.8 per cent of the world total), China (US\$ 329 billion, 7.5 per cent), Germany (US\$ 317 billion, 7.2 per cent), France (US\$ 189 billion, 4.3 per cent) and the United Kingdom

(US\$ 174 billion, 4.0 per cent). China replaced Germany as the second-largest importer of commercial services, while France moved from number six to number four. As a result, Japan exited the list of top five importers of commercial services and the United Kingdom dropped from fourth to fifth place.

If trade between EU member states is excluded and the European Union is treated as a single entity, the European Union was the top exporter of commercial services in 2013, with exports valued at US\$ 891 billion (25.0 per cent of the world total). It was followed by the United States (18.7 per cent), China (5.8 per cent), India (US\$ 151 billion, 4.3 per cent) and Japan (US\$ 145 billion, 4.1 per cent). The European Union was also the leading importer of services at US\$ 668 billion (19.7 per cent), followed by the United States (12.7 per cent), China (9.7 per cent), Japan (US\$ 162 billion, 4.8 per cent) and India (US\$ 125 billion, 3.7 per cent).

(iii) Merchandise trade by manufacturing sector

Figure 9 shows the estimated year-on-year growth in the dollar value of world trade for selected categories of manufactured goods. Growth turned negative for most manufactured products, except for office and telecom

equipment, at the beginning of 2012 and remained negative until mid-2013. By the second quarter of 2013, most categories had returned to positive (albeit slow) year-on-year growth but even as late as the fourth quarter, iron and steel remained below the growth level of one year earlier. Iron and steel finally recorded a positive year-on-year increase in the first quarter of 2014, but growth in other categories moderated or turned slightly negative in the case of office and telecom equipment.

Iron and steel trade is very pro-cyclical and tends to lag behind other indicators of economic activity. At the beginning of 2013, world trade in iron and steel was down

10 per cent compared with a year earlier, but by the end of the year it was still down 4 per cent.

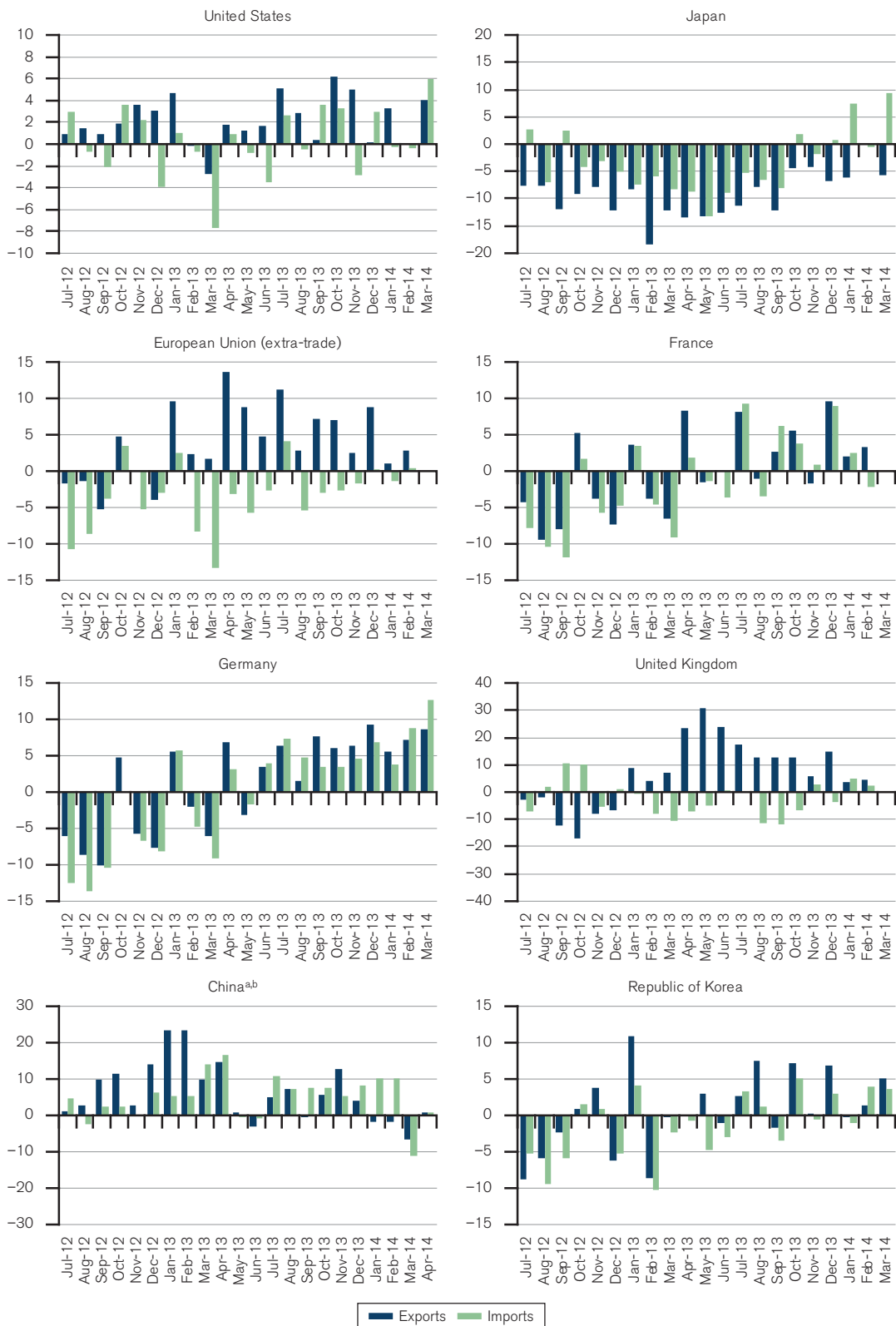
Trade in automotive products is equally cyclical but leading, in the sense that its upturns and downturns precede those in other sectors. In the first quarter of 2013, trade in vehicles and parts dropped 4 per cent from its level a year earlier but by the fourth quarter trade in automotive products was 9 per cent higher than a year earlier. This rebound bodes well for the economic recovery and for trade in inputs to automobile production, including iron and steel, electronics and various raw materials.

Endnote

1 Figures greater than 50 indicate expansion.

Appendix figure

Appendix Figure 1: Merchandise exports and imports of selected G-20 economies, July 2012 – March 2014^a
(year-on-year percentage change in current dollar values)

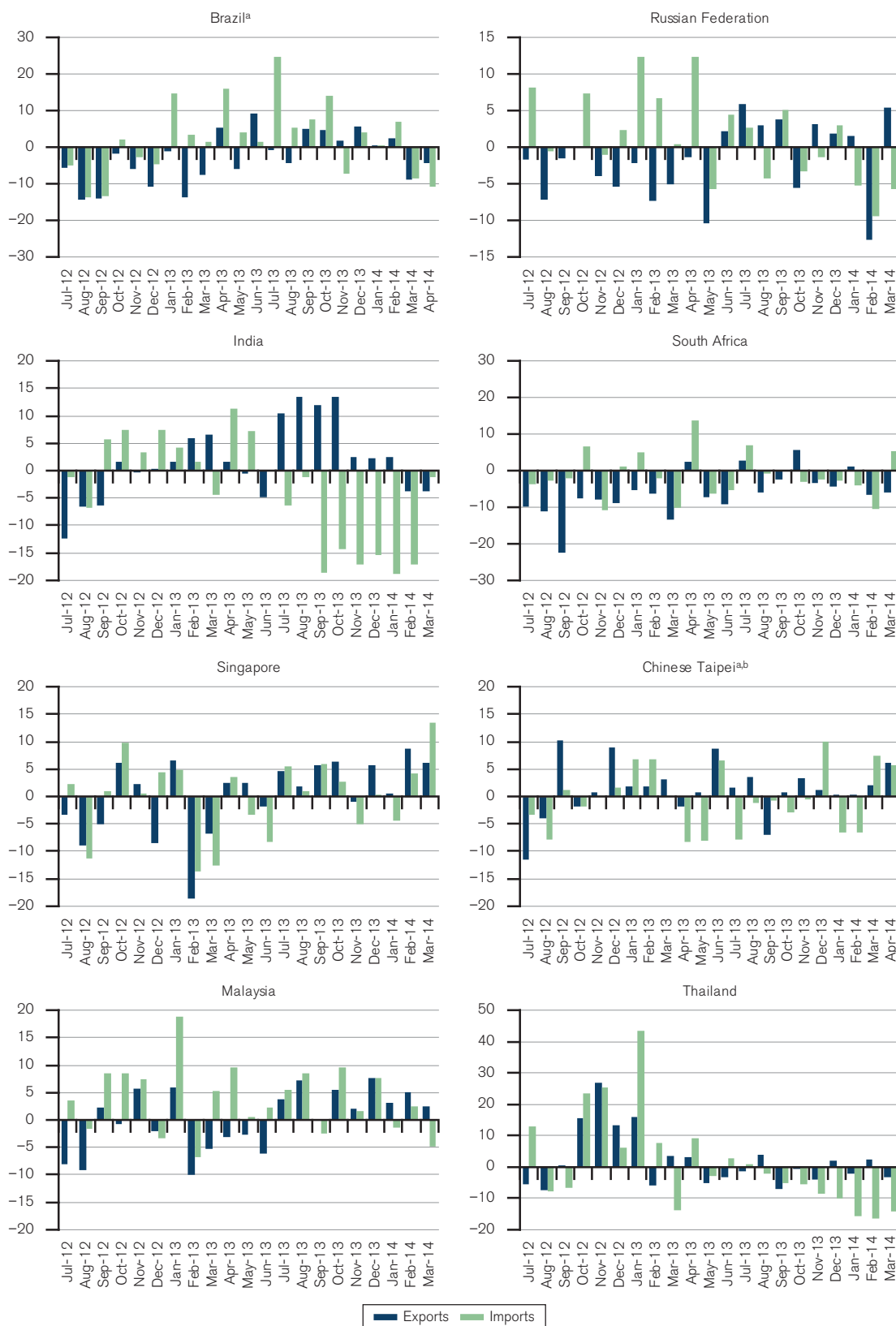


Sources: IMF International Financial Statistics, Global Trade Information Services GTA database, national statistics.

^aData for April 2014 are available for China, Brazil and Chinese Taipei.

^bJanuary and February averaged to minimize distortions due to lunar new year.

Appendix Figure 1: Merchandise exports and imports of selected G-20 economies, July 2012 – March 2014 (continued)
(year-on-year percentage change in current dollar values)

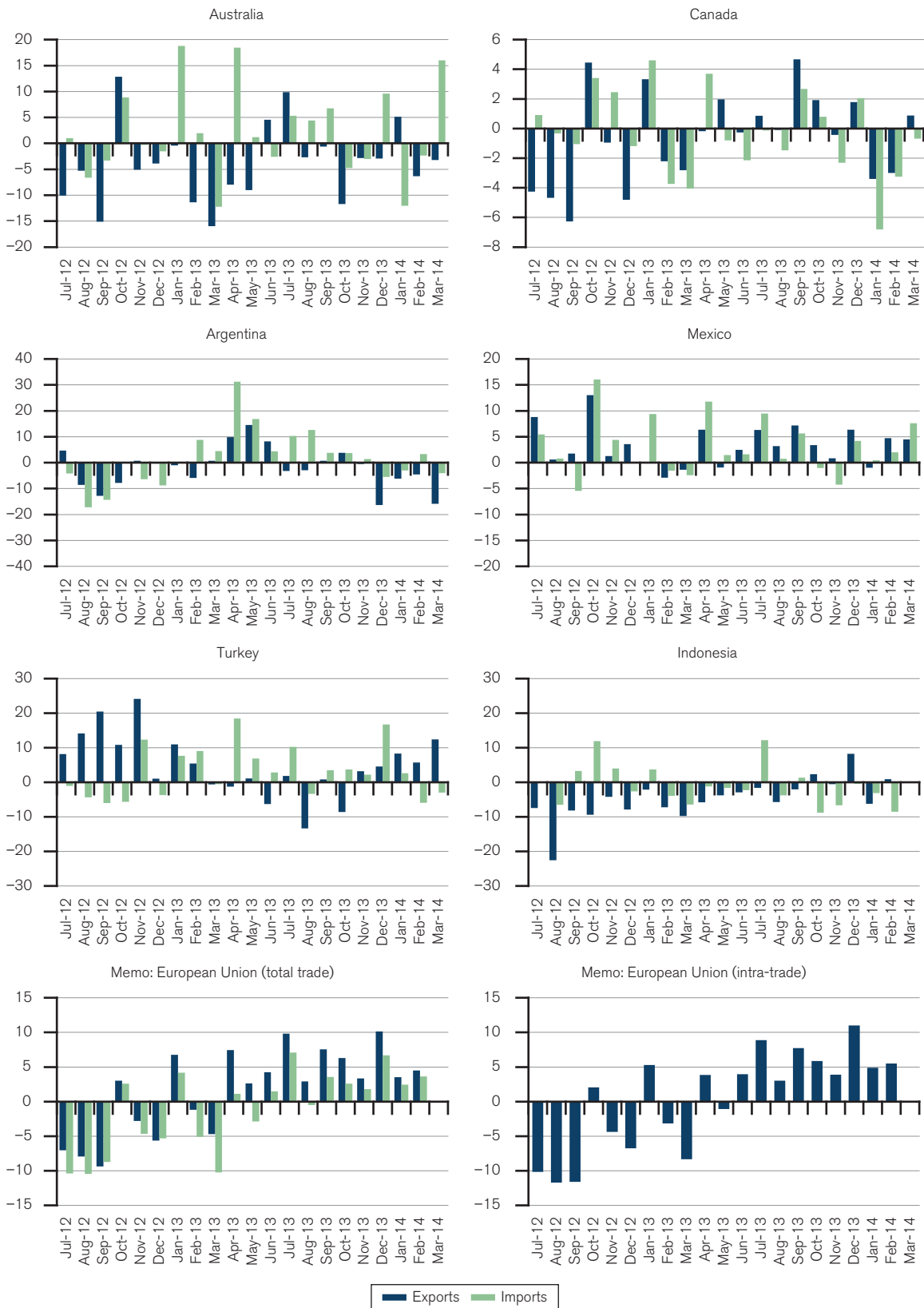


Sources: IMF International Financial Statistics, Global Trade Information Services GTA database, national statistics.

^aData for April 2014 are available for China, Brazil and Chinese Taipei.

^bJanuary and February averaged to minimize distortions due to lunar new year.

Appendix Figure 1: **Merchandise exports and imports of selected G-20 economies, July 2012–March 2014** (continued)
(year-on-year percentage change in current dollar values)



Sources: IMF International Financial Statistics, Global Trade Information Services GTA database, national statistics.

Appendix tables

Appendix Table 1: World merchandise trade by region and selected economies, 2005–13
(US\$ billion and percentage)

	Exports					Imports				
	Value	Annual percentage change				Value	Annual percentage change			
	2013	2005-13	2011	2012	2013	2013	2005-13	2011	2012	2013
World	18,300	8	20	0	2	18,410	7	19	0	1
North America	2,418	6	16	4	2	3,195	4	15	3	0
United States	1,580	7	16	4	2	2,329	4	15	3	0
Canada ^a	458	3	16	1	1	474	5	15	2	0
Mexico	380	7	17	6	3	391	7	16	5	3
South and Central America^b	736	9	28	-1	-2	773	12	26	3	3
Brazil	242	9	27	-5	0	250	16	24	-2	7
Other South and Central America ^b	494	9	29	1	-3	523	11	27	5	0
Europe	6,646	5	18	-4	4	6,598	5	17	-6	1
European Union (28)	6,076	5	18	-5	5	6,004	4	17	-6	1
Germany	1,453	5	17	-5	3	1,189	5	19	-7	2
France	580	3	14	-5	2	681	4	18	-6	1
Netherlands	672	6	16	-2	3	590	6	16	-1	0
United Kingdom	542	4	22	-7	15	655	3	15	2	-5
Italy	518	4	17	-4	3	477	3	15	-13	-2
Commonwealth of Independent States (CIS)	779	11	33	2	-3	574	13	30	6	0
Russian Federation ^a	523	10	30	1	-1	343	13	30	4	2
Africa	602	9	16	5	-6	628	12	18	9	2
South Africa	96	8	19	-8	-4	126	9	28	2	-1
Africa less South Africa	507	9	16	8	-6	502	13	16	10	3
Oil exporters ^c	330	8	14	12	-10	199	14	11	10	9
Non oil exporters	177	10	20	1	3	303	12	18	10	0
Middle East	1,347	12	40	6	0	779	11	17	8	6
Asia	6,288	9	18	2	3	6,341	10	23	4	2
China	2,209	14	20	8	8	1,950	15	25	4	7
Japan	715	2	7	-3	-10	833	6	23	4	-6
India	313	15	34	-2	6	466	16	33	5	-5
Newly industrialized economies (4) ^d	1,295	7	16	-1	1	1,300	8	19	0	0
Memorandum										
MERCOSUR ^e	342	10	26	-5	1	348	15	25	-3	7
ASEAN ^f	1,273	9	18	1	1	1,246	10	21	6	2
EU (28) extra-trade	2,307	7	21	0	7	2,235	5	18	-4	-3
Least-developed countries (LDCs)	215	13	24	1	5	244	14	23	9	7

Source: WTO Secretariat.

Note: Data for the member states of the European Union are sourced from Eurostat, compiled in accordance with the community concept and may differ from national statistics.

^aImports are valued f.o.b.

^bIncludes the Caribbean. For composition of groups see the Technical Notes of WTO, *International Trade Statistics*, 2013.

^cAlgeria, Angola, Cameroon, Chad, Congo, Equatorial Guinea, Gabon, Libya, Nigeria, Sudan.

^dHong Kong, China; Republic of Korea; Singapore; Chinese Taipei.

^eCommon Market of the Southern Cone: Argentina, Brazil, Paraguay, Uruguay.

^fAssociation of Southeast Asian Nations: Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam.

Appendix Table 2: World commercial services trade by region and selected economies, 2005–13
(US\$ billion and percentage)

	Exports					Imports				
	Value	Annual percentage change				Value	Annual percentage change			
	2013	2005-13	2011	2012	2013	2013	2005-13	2011	2012	2013
World	4,645	8	12	2	6	4,380	8	12	3	5
North America	761	7	10	5	5	566	6	8	3	3
United States	662	8	11	5	5	432	6	7	4	4
South and Central America^a	144	9	18	6	2	196	14	24	6	6
Brazil	37	12	21	5	-2	83	18	23	7	7
Europe	2,194	7	13	-2	7	1,800	6	11	-2	5
European Union (28)	1,999	7	13	-2	7	1,663	6	11	-2	5
Germany	286	8	11	-1	8	317	5	11	-1	8
United Kingdom	293	5	11	-1	2	174	1	6	0	-1
France	236	...	20	-8	10	189	...	14	-9	8
Netherlands	147	6	17	-3	12	127	5	15	-1	7
Spain	145	6	15	-4	6	92	4	9	-5	3
Commonwealth of Independent States (CIS)	114	14	20	9	9	174	14	18	18	15
Russian Federation	65	13	22	7	11	123	16	22	19	18
Ukraine	19	10	14	3	4	16	11	5	10	11
Africa	90	6	2	7	-3	160	11	13	2	-1
Egypt	18	3	-19	12	-16	15	6	1	18	-5
South Africa	14	3	6	2	-6	16	4	7	-11	-7
Nigeria	2	4	-12	-10	-7	21	16	13	0	-9
Middle East	125	9	5	9	4	251	12	16	5	7
United Arab Emirates ^b	16	...	9	18	15	70	...	35	12	12
Saudi Arabia, Kingdom of	11	...	7	-5	5	52	...	8	-9	4
Asia	1,217	11	13	7	5	1,235	10	14	8	4
China	205	14	9	8	7	329	19	23	18	18
Japan	145	...	3	0	2	162	...	6	6	-7
India	151	14	19	5	4	125	13	9	3	-3
Singapore	122	...	16	7	4	128	...	13	9	4
Korea, Republic of	112	11	9	17	1	106	8	5	5	1
Hong Kong, China	133	10	13	6	6	60	7	10	4	3
Australia	52	7	11	3	0	62	10	20	4	-2
Memorandum item										
Extra-EU(28) trade	891	...	13	0	6	668	...	10	-2	4

Sources: WTO and UNCTAD Secretariats.

Note: While provisional full-year data were available in mid-March for some 50 countries, accounting for more than two-thirds of world commercial services trade, estimates for most other countries are based on data for the first three-quarters.

^aIncludes the Caribbean. For composition of groups see Chapter IV Metadata of WTO, *International Trade Statistics*, 2013.

^bSecretariat estimates.

... indicates unavailable or non-comparable figures.

Appendix Table 3: **Merchandise trade: leading exporters and importers, 2013**
(US\$ billion and percentage)

Rank	Exporters	Value	Share	Annual % change	Rank	Importers	Value	Share	Annual % change
1	China	2,209	11.7	8	1	United States	2,329	12.3	0
2	United States	1,580	8.4	2	2	China	1,950	10.3	7
3	Germany	1,453	7.7	3	3	Germany	1,189	6.3	2
4	Japan	715	3.8	-10	4	Japan	833	4.4	-6
5	Netherlands	672	3.6	3	5	France	681	3.6	1
6	France	580	3.1	2	6	United Kingdom	655	3.5	-5
7	Korea, Republic of	560	3.0	2	7	Hong Kong, China	622	3.3	12
8	United Kingdom	542	2.9	15		- retained imports	141	0.7	4
9	Hong Kong, China	536	2.8	9	8	Netherlands	590	3.1	0
	- domestic exports	20	0.1	-11	9	Korea, Republic of	516	2.7	-1
	- re-exports	516	2.7	10	10	Italy	477	2.5	-2
10	Russian Federation	523	2.8	-1	11	Canada ^a	474	2.5	0
11	Italy	518	2.8	3	12	India	466	2.5	-5
12	Belgium	469	2.5	5	13	Belgium	451	2.4	3
13	Canada	458	2.4	1	14	Mexico	391	2.1	3
14	Singapore	410	2.2	0	15	Singapore	373	2.0	-2
	- domestic exports	219	1.2	-4		- retained imports ^b	182	1.0	-9
	- re-exports	191	1.0	6	16	Russian Federation ^a	343	1.8	2
15	Mexico	380	2.0	3	17	Spain	339	1.8	0
16	United Arab Emirates ^c	379	2.0	9	18	Chinese Taipei	270	1.4	0
17	Saudi Arabia, Kingdom of ^c	376	2.0	-3	19	Turkey	252	1.3	6
18	Spain	317	1.7	7	20	United Arab Emirates ^c	251	1.3	11
19	India	313	1.7	6	21	Thailand	251	1.3	0
20	Chinese Taipei	305	1.6	1	22	Brazil	250	1.3	7
21	Australia	253	1.3	-1	23	Australia	242	1.3	-7
22	Brazil	242	1.3	0	24	Malaysia	206	1.1	5
23	Switzerland	229	1.2	1	25	Poland	205	1.1	3
24	Thailand	229	1.2	0	26	Switzerland	201	1.1	2
25	Malaysia	228	1.2	0	27	Indonesia	187	1.0	-2
26	Poland	202	1.1	9	28	Austria	182	1.0	2
27	Indonesia	183	1.0	-3	29	Saudi Arabia, Kingdom of	168	0.9	8
28	Austria	175	0.9	5	30	Sweden	160	0.8	-3
29	Sweden	168	0.9	-3					
30	Czech Republic	162	0.9	3					
	Total of above ^d	15,364	81.7	-		Total of above ^d	15,505	82.1	-
	World ^d	18,816	100.0	2		World ^d	18,890	100.0	2

Source: WTO Secretariat.

Note: Data for the member states of the European Union are sourced from Eurostat, compiled in accordance with the community concept and may differ from national statistics.

^aImports are valued f.o.b.

^bSingapore's retained imports are defined as imports less re-exports.

^cSecretariat estimates.

^dIncludes significant re-exports or imports for re-export.

Appendix Table 4: **Merchandise trade: leading exporters and importers excluding intra-EU (28) trade, 2013**
(US\$ billion and percentage)

Rank	Exporters	Value	Share	Annual % change	Rank	Importers	Value	Share	Annual % change
1	Extra-EU(28) exports	2,307	15.3	7	1	United States	2,329	15.4	0
2	China	2,209	14.7	8	2	Extra-EU(28) imports	2,235	14.8	-3
3	United States	1,580	10.5	2	3	China	1,950	12.9	7
4	Japan	715	4.8	-10	4	Japan	833	5.5	-6
5	Korea, Republic of	560	3.7	2	5	Hong Kong, China	622	4.1	12
6	Hong Kong, China	536	3.6	9		– retained imports	141	0.9	4
	– domestic exports	20	0.1	-11	6	Korea, Republic of	516	3.4	-1
	– re-exports	516	3.4	10	7	Canada ^a	474	3.1	0
7	Russian Federation	523	3.5	-1	8	India	466	3.1	-5
8	Canada	458	3.0	1	9	Mexico	391	2.6	3
9	Singapore	410	2.7	0	10	Singapore	373	2.5	-2
	– domestic exports	219	1.5	-4		– retained imports ^b	182	1.2	-9
	– re-exports	191	1.3	6	11	Russian Federation ^a	343	2.3	2
10	Mexico	380	2.5	3	12	Chinese Taipei	270	1.8	0
11	United Arab Emirates ^c	379	2.5	9	13	Turkey	252	1.7	6
12	Saudi Arabia, Kingdom of ^c	376	2.5	-3	14	United Arab Emirates ^c	251	1.7	11
13	India	313	2.1	6	15	Thailand	251	1.7	0
14	Chinese Taipei	305	2.0	1	16	Brazil	250	1.7	7
15	Australia	253	1.7	-1	17	Australia	242	1.6	-7
16	Brazil	242	1.6	0	18	Malaysia	206	1.4	5
17	Switzerland	229	1.5	1	19	Switzerland	201	1.3	2
18	Thailand	229	1.5	0	20	Indonesia	187	1.2	-2
19	Malaysia	228	1.5	0	21	Saudi Arabia, Kingdom of	168	1.1	8
20	Indonesia	183	1.2	-3	22	Viet Nam	132	0.9	16
21	Norway	154	1.0	-4	23	South Africa ^c	126	0.8	-1
22	Turkey	152	1.0	0	24	Norway	90	0.6	3
23	Qatar	137	0.9	3	25	Chile	79	0.5	-1
24	Viet Nam	132	0.9	15	26	Ukraine	77	0.5	-9
25	Kuwait ^c	115	0.8	-3	27	Israel ^c	75	0.5	-1
26	Nigeria ^c	103	0.7	-10	28	Argentina	74	0.5	8
27	South Africa	96	0.6	-4	29	Philippines	65	0.4	0
28	Iraq ^c	90	0.6	-5	30	Iraq ^c	61	0.4	8
29	Venezuela, Bolivarian Rep. of ^c	89	0.6	-9					
30	Kazakhstan	83	0.5	-5					
	Total of above ^d	13,566	90.2	-		Total of above ^d	13,912	92.0	-
	World ^d (excl. Intra-EU(28))	15,047	100.0	1		World ^d (excl. Intra-EU(28))	15,121	100.0	1

Source: WTO Secretariat.

^aImports are valued f.o.b.^bSingapore's retained imports are defined as imports less re-exports.^cSecretariat estimates.^dIncludes significant re-exports or imports for re-export.

Appendix Table 5: **Commercial services trade: leading exporters and importers, 2013**
(US\$ billion and percentage)

Rank	Exporter	Value	Share	Annual % change	Rank	Importer	Value	Share	Annual % change
1	United States	662	14.3	5	1	United States	432	9.8	4
2	United Kingdom	293	6.3	2	2	China	329	7.5	18
3	Germany	286	6.2	8	3	Germany	317	7.2	8
4	France	236	5.1	10	4	France	189	4.3	8
5	China	205	4.4	7	5	United Kingdom	174	4.0	-1
6	India	151	3.2	4	6	Japan	162	3.7	-7
7	Netherlands	147	3.2	12	7	Singapore	128	2.9	4
8	Japan	145	3.1	2	8	Netherlands	127	2.9	7
9	Spain	145	3.1	6	9	India	125	2.8	-3
10	Hong Kong, China	133	2.9	6	10	Russian Federation	123	2.8	18
11	Ireland	125	2.7	8	11	Ireland	118	2.7	5
12	Singapore	122	2.6	4	12	Italy	107	2.4	3
13	Korea, Republic of	112	2.4	1	13	Korea, Republic of	106	2.4	1
14	Italy	110	2.4	6	14	Canada	105	2.4	-1
15	Belgium	106	2.3	7	15	Belgium	98	2.2	7
16	Switzerland	93	2.0	5	16	Spain	92	2.1	3
17	Canada	78	1.7	0	17	Brazil	83	1.9	7
18	Luxembourg	77	1.7	8	18	United Arab Emirates	70	1.6	12
19	Sweden	75	1.6	6	19	Australia	62	1.4	-2
20	Denmark	70	1.5	6	20	Denmark	60	1.4	3
21	Russian Federation	65	1.4	11	21	Hong Kong, China	60	1.4	3
22	Austria	65	1.4	8	22	Sweden	57	1.3	6
23	Thailand	59	1.3	19	23	Thailand	55	1.3	4
24	Macao, China	54	1.2	18	24	Switzerland	53	1.2	13
25	Australia	52	1.1	0	25	Saudi Arabia, Kingdom of	52	1.2	4
26	Chinese Taipei	51	1.1	5	26	Norway	49	1.1	2
27	Turkey	46	1.0	8	27	Luxembourg	46	1.0	9
28	Norway	41	0.9	-5	28	Malaysia	45	1.0	6
29	Poland	40	0.9	6	29	Austria	45	1.0	6
30	Malaysia	40	0.9	6	30	Chinese Taipei	42	1.0	-1
	Total of above	3,885	83.6	-		Total of above	3,510	80.1	-
	World	4,644	100.0	6		World	4,381	100.0	5

Sources: WTO and UNCTAD Secretariats.

Note: Figures for a number of countries and territories have been estimated by the Secretariat. Annual percentage changes and rankings are affected by continuity breaks in the series for a large number of economies, and by limitations in cross-country comparability.

^aSecretariat estimate.

... indicates unavailable or non-comparable figures.

- indicates non-applicable.

Appendix Table 6: Commercial services trade: leading exporters and importers excluding intra-EU(28) trade, 2013

(US\$ billion and percentage)

Rank	Exporters	Value	Share	Annual % change	Rank	Importers	Value	Share	Annual % change
1	Extra-EU(28) exports	891	25.2	6	1	Extra-EU(28) imports	668	19.7	4
2	United States	662	18.7	5	2	United States	432	12.7	4
3	China	205	5.8	7	3	China	329	9.7	18
4	India	151	4.3	4	4	Japan	162	4.8	-7
5	Japan	145	4.1	2	5	Singapore	128	3.8	4
6	Hong Kong, China	133	3.8	6	6	India	125	3.7	-3
7	Singapore	122	3.5	4	7	Russian Federation	123	3.6	18
8	Korea, Republic of	112	3.2	1	8	Korea, Republic of	106	3.1	1
9	Switzerland	93	2.6	5	9	Canada	105	3.1	-1
10	Canada	78	2.2	0	10	Brazil	83	2.5	7
11	Russian Federation	65	1.8	11	11	United Arab Emirates ^a	70	2.1	12
12	Thailand	59	1.7	19	12	Australia	62	1.8	-2
13	Macao, China	54	1.5	18	13	Hong Kong, China	60	1.8	3
14	Australia	52	1.5	0	14	Thailand	55	1.6	4
15	Chinese Taipei	51	1.5	5	15	Switzerland	53	1.6	13
16	Turkey	46	1.3	8	16	Saudi Arabia, Kingdom of	52	1.5	4
17	Norway	41	1.1	-5	17	Norway	49	1.5	2
18	Malaysia	40	1.1	6	18	Malaysia	45	1.3	6
19	Brazil	37	1.1	-2	19	Chinese Taipei	42	1.2	-1
20	Israel	32	0.9	5	20	Indonesia	34	1.0	3
21	Lebanese Republic ^a	23	0.7	5	21	Mexico	29	0.9	9
22	Indonesia	22	0.6	-4	22	Qatar	25	0.7	12
23	Philippines	22	0.6	7	23	Angola ^a	22	0.7	6
24	Mexico	20	0.6	21	24	Turkey	22	0.7	16
25	Ukraine	19	0.5	4	25	Nigeria	21	0.6	-9
26	Egypt	18	0.5	-16	26	Kuwait ^a	20	0.6	3
27	United Arab Emirates ^a	16	0.5	15	27	Israel	20	0.6	-4
28	Argentina	14	0.4	-5	28	Argentina	19	0.6	6
29	South Africa	14	0.4	-6	29	Venezuela, Bolivarian Rep. of	17	0.5	0
30	New Zealand	13	0.4	1	30	South Africa	16	0.5	-7
	Total of above	3,251	91.9	-		Total of above	2,995	88.4	-
	World (excl. intra-EU(28))	3,537	100.0	5		World (excl. intra-EU(28))	3,387	100.0	5

Source: WTO and UNCTAD Secretariats.

Note: Figures for a number of countries and territories have been estimated by the Secretariat. Annual percentage changes and rankings are affected by continuity breaks in the series for a large number of economies, and by limitations in cross-country comparability.

^aSecretariat estimates.

... indicates unavailable or non-comparable figures.

- indicates non-applicable.

II. Trade and development: recent trends and the role of the WTO

The *World Trade Report 2014* looks at how many developing economies are successfully leveraging trade for rapid growth. It focuses on four recent trade trends – the rise of new global players, the spread of production chains, increasing commodity prices, and growing economic interdependence. These trends are transforming the way developing economies benefit from global economic integration. The rules, flexibilities, technical assistance and institutional infrastructure of the WTO have been helpful for developing economies to take advantage of, adapt to and mitigate risks arising from these four trends. The multilateral trading system itself will also need to continue to adapt, so that it can serve to realize the full development potential inherent in the world economy's ongoing transformation.

A. Introduction

Globalization is transforming development. This section examines how, in its scope and speed, the recent rise of the developing world is unprecedented – eclipsing the rise of the newly industrializing countries after the Second World War, and dwarfing the earlier rise of Europe and North America in the late 19th century. There are many reasons why the developing world has achieved economic lift-off. One of the most important is its integration into the world economy – and the new access to markets, technology and investment that has resulted. This rise of the developing world is one of four recent trends that holds new development opportunities while also bringing new challenges. The same is true for three other trends identified here: the spread of production chains, high commodity prices, and growing economic interdependence.

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Some key facts and findings

- Four new trends have affected the relationship between trade and development since the start of the millennium. As a result, new opportunities and challenges have arisen, particularly for developing countries.
- The four trends are the economic growth of many developing countries (Section B), the growing integration of global production through supply chains (Section C), the higher prices for agricultural goods and natural resources (Section D) and increasing interdependence of the world economy, which causes shocks to reverberate more quickly and globally (Section E). This changing trade and development landscape in turn has implications for the WTO (Section F).
- Since the Industrial Revolution, economic development has widened, deepened and accelerated. In the 19th century, it spread quickly from England to Western Europe and North America. After the Second World War, Japan and newly industrializing economies rapidly caught up, and starting in the 1980s, much of the rest of the developing world began a process of even more rapid industrialization.
- These episodes of development were accompanied by increases in trade, spurred by reductions in trade barriers and costs. During periods of trade repression, such as between the two world wars, economic growth was more subdued.

The rise of the developing world is the most significant economic event of our time. Partly because of the shift to more outward-looking economic policies, partly because of the impact of new transport and communications technologies, and partly because the world economy is more open than ever before, emerging economies have been able to harness globalization to achieve unheard-of rates of economic growth – with 11 economies, representing half the world's population, growing collectively at over 6 per cent a year since 2000.¹ Since 1980, the developing world's share of global trade has grown from a third to almost half. China, to take the most obvious example, is now the world's largest exporter; thirty years ago it ranked 32nd. Most developing countries have seen their economies grow in tandem with their dramatically increasing shares of world trade. China, with its 1.35 billion people, has seen its economy grow at an average of 10 per cent per year for the past three decades. India, with its 1.2 billion people, grew at 7.5 per cent a year between 2000 and 2011, although progress has recently slowed. While these emerging giants have captured the lion's share of attention, this remarkable story of trade-led development includes countries of all sizes and regions – from Indonesia, Ethiopia and Chile, to Cambodia, Ghana and Qatar.

Economic growth is not the only condition for development, but it is a necessary condition – which explains why many of these same countries are also making enormous strides in improved health, educational attainment, living standards and poverty reduction. As the United Nations observed in 2013, “never in history have the living conditions and prospects of so many people changed so dramatically and so fast” (United Nations Development Programme, 2013). At the same time, the recent slowdown of several – though certainly not most – developing countries in the aftermath of the Great Recession of 2008-09 is a reminder that future progress is neither inevitable nor irreversible. Successfully integrating into a turbulent, volatile, ever-changing global economy is a difficult process for developing countries, made even more challenging by the need to share out domestically the benefits and costs of economic growth and adjustment if political support for trade opening is to be sustained. A number of economic and political obstacles – whether self-inflicted or inflicted by others – could still prevent developing countries from continuing along their current growth trajectory.

More than anything, the continued rise of developing countries will depend on maintaining an open global economy. This task too has become more challenging, even as it has become more important. Just as expanding trade is transforming development – opening up new export opportunities, improving access to capital and resources, and stimulating technological diffusion, adaptation and innovation – so too is the rise of the developing world transforming the trading system. Fast-emerging economies such as China are generating enormous new demand for raw materials and manufacturing inputs, pulling other developing economies into their slip-stream, while providing new markets for industrialized countries' machinery, services and technologies. Developing economies may be increasing

their share of world trade, but everyone's trade is growing. However, the vertiginous rise of new trade giants requires that all economies, developed and developing alike, adjust and adapt. The result is a more complex, multi-speed, multi-polar world economy.

It is not just trade power that is shifting but trade relations as well. The expansion of global supply chains – where national economies form links in globally integrated production systems – is dramatically deepening economic interdependence. So too is the growth of services trade in recent years. In a world growing more, not less, interconnected, the global rules and policy coordination provided by the multilateral trading system are more necessary than ever.

1. Four recent trade trends

The first of the four trends highlighted in this report is the economic rise of developing and emerging economies, which is explored in depth in Section B. Not coincidentally, the rising living standards in developing regions since 2000 have gone hand-in-hand with rising shares in world trade for these countries. By embracing a policy of trade openness and integration, these countries now have access not just to the capital, technology, and resources needed to fuel rapid industrialization, but to vast and expanding overseas demand for their surging exports.

The old patterns of world trade dominated by the advanced economies in the North are being transformed as emerging economies in the South become new poles of trade expansion. Since 1990, South-South trade – that is, trade among emerging and other developing economies – has grown from 8 per cent of world trade in 1990 to around 25 per cent today, and is projected to reach 30 per cent by 2030. Trade corridors between Asia and North America, and between Asia and Europe, now surpass the old transatlantic trade corridor, while trade corridors between Africa and Asia or Latin America and Africa are growing in importance. Even as the South's share of world trade expands, world trade as a whole continues to grow, meaning that developing countries have ever-richer and more diverse markets for their exports. In short, the rise of new trade powers is a positive sum game.

But despite these gains, developing countries still have a long development path ahead of them, since they fall short of industrial countries on a large number of important economic indicators. Significant proportions of their populations still live below the poverty line. Incomes in emerging economies are still a fraction of those in developed economies. While the export success of today's emerging economies highlights new opportunities and paths for other developing countries, the pace of growth among developing countries remains uneven. Some are experiencing high and sustained growth, others are struggling to move beyond middle-income levels, while still others may be falling behind. This report sheds light on the growing importance of developing countries in the world trading

system, and explores how the WTO can play an increasingly central role in advancing their various development objectives.

A second, related, trend, explored in Section C, is the growing integration of global production – especially the rise of supply chains – which is transforming the nature of trade and the way developing countries “connect” to the global economy. A combination of reduced transport and logistics costs, improved information technologies and more open economies have made it easier to “unbundle” production, not only within countries, but across a range of them. Four-fifths of world trade are now channelled through multinationals that locate various stages or tasks of the production process in the most cost-efficient locations around the planet.

Whereas, in the past, value chains were mainly North-South arrangements, South-South value chains are now expanding as well. For developing economies, value chains can lower the bar for entry into the global economy by linking them to established trade networks, thus lowering the costs of economic integration, and allowing them to focus on the products or sectors where they have a comparative advantage, without the need for a comprehensive industrial base. Value chains are also influencing the trade integration strategies of developing economies.

While the average import content of exports is around 25 per cent – and increasing over time – and almost 30 per cent of merchandise trade is now in intermediate goods or components, increasing exports now directly hinges on increasing imports and on removing obstacles to imported inputs. Since value chains involve the integration of production platforms, not just cross-border trade flows, these obstacles can involve everything from tariff barriers and transport bottlenecks to differing standards, investment restrictions and inefficient service suppliers. The emerging world of “unbundled production” offers an important new channel for trade growth and development, while at the same time highlighting differences in countries’ capacity to integrate – or in the quality of their integration – as well as the costs of remaining on the margins.

A third major trend, examined in Section D, is the rising price of agricultural goods and natural resources since 2000. With some of the fastest-growing developing economies in the Middle East, Africa and Latin America recently having become commodity-rich exporters, attention has now shifted from how developing economies can diversify out of resources to how they can strengthen their comparative advantage in resources, benefit more (and more widely) from them, and reduce the adverse impact of the boom and bust cycles that typically characterize these markets. This section identifies a number of key issues to be addressed if developing economies with actual or potential comparative advantages in agriculture or natural resources are to exploit higher commodity prices. These include reducing new and less transparent forms of trade protection, guaranteeing adequate rates of return on natural resources and addressing the social and environmental issues critical to inclusive and sustainable growth.

As the world economy has become more interconnected through trade, investment, technology and people flows, it has also become more interdependent. This is the subject of Section E. Just as the economic benefits of widening and deeper integration now spread more quickly across countries and regions, so too do the economic costs, as exemplified by the way in which the shockwaves from the 2008 financial crisis and the subsequent economic downturn reverberated globally. Policy decisions in one country can have simultaneous and often unintended spill-over effects in many distant countries. These spill-overs can become major setbacks for developing economies, especially for the smallest and poorest countries, which lack adequate shock absorbers and are the most vulnerable to economic volatility.

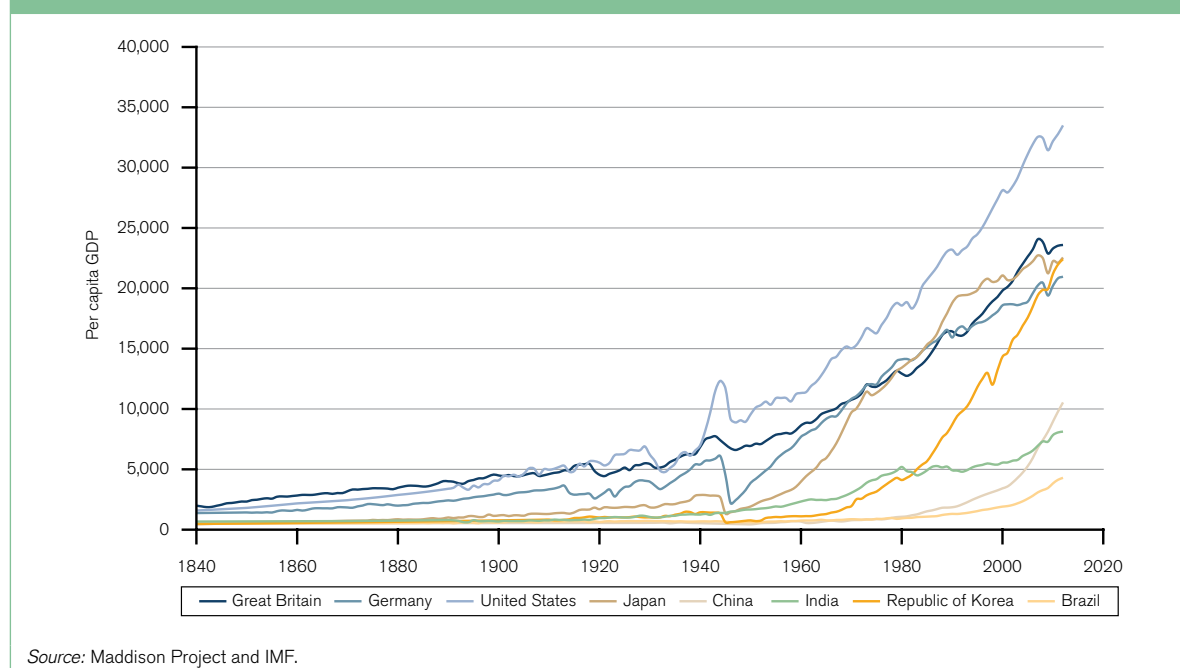
However, there are also major benefits that flow from growing global economic interdependence and diversification. Without strong and robust growth in the developing world after 2008, especially in China and India, the economic fallout from the recent global downturn would have been much worse. Unlike during past crises – such as that of the 1930s – the world economic system proved surprisingly resilient in the face of the Great Recession of 2008–09. Section E explores the lessons we have learned from the recent crisis regarding reducing risks and promoting security in times of global turmoil.

Sections B to E follow similar structures in examining the opportunities and challenges that these four trade trends present to developing countries. They first provide broad, “stylized” facts about these trends and their determinants. Subsequently, the development implications of the trends are analysed, clarifying how participation in supply chains, increasing commodity prices and the global recession have played a significant part in different development patterns across countries in the last 15 years. Finally, the sections identify policies that have proved successful for emerging economies. This highlights the obstacles that need to be removed if other developing countries are to benefit from these trends, and the additional policies that may be needed to maximize benefits and reduce risks.

Building on this analysis, Section F shows how existing WTO rules and practices address development challenges, and how flexibilities currently available to developing and least-developed countries in these trade rules can help facilitate their integration.

Expanding trade may be essential for development but it is hardly sufficient. Countries that have succeeded in transforming trade and economic growth into inclusive, sustainable and broad-based development – whether measured in terms of improving health, rising education, increasing opportunities for women, or decreasing poverty – have also pursued a range of policies that not only share the gains (and costs) of trade openness but ensure that societies are equipped to benefit from global economic integration. While such policies are largely beyond the scope of this study, the report does consider income distribution – not including income per capita – and

Figure A.1: Per capita GDP for selected economies, 1840-2012
(1990 International Geary-Khamis dollars)



environmental quality as dimensions of development. This broad perspective is also useful in understanding how the multilateral trading system can contribute to creating a more inclusive and environmentally sustainable development, and thus reinforce popular support for further trade opening and global economic cooperation.

The sheer scope and scale of the latest wave of global economic development may look revolutionary but it is in fact evolutionary, building on trends that began 200 years ago during the Industrial Revolution. The following section looks at these trends from an historical perspective, not only to better understand the relationship between trade and development, but to speculate where the process may be heading in the years ahead.

2. Development and trade: an historical analysis

(a) Global economic development: widening, deepening and accelerating

Two hundred years ago, as a result of the Industrial Revolution, the world entered a period of unprecedented economic growth that continues to this day. Although economic progress was slow and geographically limited at first, it gradually accelerated and radiated outwards, each phase, or wave, of global economic development faster and more extensive than its predecessor (see Figure A.1).²

The first wave, which took place in the second half of the 19th century, saw Great Britain, a number of other countries in Western Europe, and North America – the early industrializers – race ahead of the rest of the world, a process

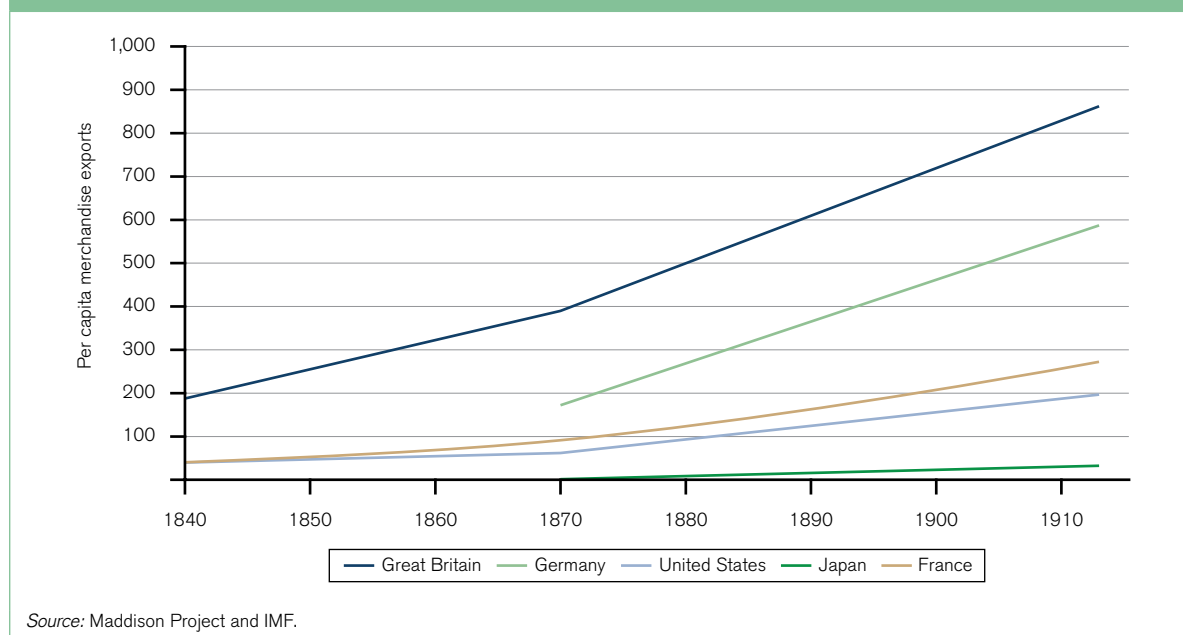
which has been called “the great divergence” (Pritchett, 1997). A subsequent wave, which occurred after the Second World War, saw the fast-developing economies of that era – Japan and the newly industrializing economies – rapidly catch up with the developed West, even as the advanced industrial countries redoubled their lead on the poorer and less developed economies that had been left behind.

A final wave, which began in the 1980s, has seen much of the rest of the developing world, including the two giants, China and India, finally begin their own process of rapid industrialization. This “great convergence”, which in many ways is only beginning, represents the largest and fastest phase of economic catch-up so far. As Martin Wolf succinctly puts it, “never before have so many people – or so large a portion of the world’s people – enjoyed such large rises in their standards of living” (Wolf, 2004).

This accelerating and widening circle of development was only possible because the world economy grew more open and integrated. At each stage, expanding trade was a powerful driver of economic development – opening up new markets, improving access to raw materials, promoting international specialization and stimulating technological diffusion and innovation – which in turn drove further trade expansion.

A central challenge at each historical stage was the development of international rules and structures capable of helping countries to coordinate their increasingly international economic interests, and of managing the powerful forces and stresses unleashed by economic change, such as the rise of new economic powers, the spread of technology and production, and the deepening of global economic integration. Periods of relative economic openness – after

Figure A.2: Per capita merchandise exports of selected economies, 1840-1913 (1990 US\$)



the mid-19th century, after 1945, and after the Cold War – have tended to coincide with global economic development, while periods of trade fragmentation and protectionism – most notably during the inter-war period – have seen economic development stall or go into reverse.

(b) The first wave – early industrializers

The Industrial Revolution, despite its name, had modest beginnings. Although Great Britain was the first industrializer – a lead secured in part because of its access to vast overseas colonial markets and its early embrace of free trade – its economic growth of less than 1 per cent a year in the first half of the 19th century was unremarkable by subsequent standards. Only when other early “developing countries”, including Germany, France, the Netherlands, Belgium and later the United States, began to catch up with Great Britain after the mid-19th century, did the world experience the first major period of rapid economic expansion.

From 1870 to 1913, world capita GDP rose 1.3 per cent a year compared with 0.5 per cent between 1820 and 1870, and 0.07 per cent between 1700 and 1820 (Maddison, 2001). Trade, which expanded four times as fast as world output, was a critical driver of economic growth and technological diffusion throughout this period, mainly because of new transport and communications innovations – steamships, railways, telegraph cables – but also because of the spread of open trade and exchange rate policies. This period is sometimes referred to as the “first age of globalization”, but in reality only a small cluster of countries in Europe and its former colonies experienced dynamic development, while the vast majority of the world’s population, especially in Asia, Latin America and Africa, progressed only slowly, if at all. This growing divergence in living standards and wealth between the

fast-industrializing “core” of the world economy and the pre-industrial “periphery” became a defining feature of the global economic landscape over much of the subsequent two centuries.

(i) *Death of distance*

Breakthroughs in transport and communications technologies in the 19th century were both an effect and a cause of economic development (see Figure A.2). By the late 1830s, steamships were regularly crossing the Atlantic, by the 1850s service to South and West Africa had begun and, with the opening of the Suez Canal in 1869, creating an important short cut to Asia, transoceanic steam shipping took over Far Eastern trade routes as well, sealing their dominance of global trade (Landes, 1969).

Railways were the other major transport breakthrough of the early Industrial Revolution. The world’s first freight rail line, the Stockton-Darlington route, opened in 1825, and was soon copied, not just throughout Great Britain, but in the rest of Europe, the Americas, and, by the end of the century, Asia and Latin America as well. A transcontinental line linked the East and West coasts of the United States by 1869, playing a major role not just in the settlement of the West, but in linking the vast American hinterland to global markets (O’Rourke and Findlay, 2007). The Canadian-Pacific railroad was completed by 1885 and the trans-Siberian railway by 1903. The decade prior to the First World War also saw an explosion of railway building in Argentina, India, Australia, China and elsewhere. Railway lines increased from 191,000 kilometres in 1870 to nearly 1 million kilometres in 1913 (Fogel, 1964). Breakthroughs in refrigeration after the 1830s reinforced the impact of steamships and rail, allowing for the transport of chilled meat and butter over great distances (Mokyr, 1990).

Other technologies contributed to lowering communications costs. The arrival of the telegraph in the mid-19th century was as revolutionary as steamships and railroads, effectively ushering in the modern era of instantaneous global communications. The first successful transatlantic telegraph message was sent in August 1858, reducing the communication time between Europe and North America from ten days – the time it took to deliver a message by ship – to a matter of minutes. By the end of the 19th century, British-, French-, German-, and American-owned cables linked Europe and North America in a sophisticated web of telegraphic communications. As transoceanic steamships linked up distant markets, railways connected emerging industrial centres and telegraphs linked financial centres, world trade and investment surged.

(ii) Minimalist international cooperation

Although technology was the major driver of trade and integration in the second half of the 19th century, the spread of liberal economic policies also played a role. First, Great Britain removed many of its tariff barriers and trade restrictions unilaterally (the so-called Navigation and Corn Laws) between 1846 and 1860, providing a powerful push towards more open international trade. Next, in 1860, it negotiated the Cobden Chevalier Treaty with France which, in reducing trade barriers between the world's two biggest economies on a conditional most-favoured nation (MFN) basis, created an incentive for other European countries to conclude similar bilateral trade agreements. Next, in the 1870s, again following Great Britain's lead, the world's major economies shifted to the gold standard and fixed exchange rates, adding perhaps the most important pillar to global economic stability during that period.

Although these institutional arrangements were largely focused on European countries, Europe's place at the centre of the world economy and its extensive imperial and colonial ties meant that large parts of the world economy were automatically (and involuntarily) drawn into the open trading order being constructed after 1860. French, German, Belgian and Dutch colonies essentially adopted the same tariff codes as their home countries while most of Great Britain's dependencies, such as India, applied the same low, non-discriminatory tariff on foreign as well as British imports. Where developing countries attempted to resist opening up to foreign trade and investment, Western powers were prepared to use military muscle to prise open markets, for example during the Anglo-Chinese Opium War between 1839 and 1842, and when US Naval Commodore Perry, by threatening to use force, opened Japan to Western trade in 1853.

This combination of technological change, spreading trade-opening and mass migration fuelled a period of extraordinary economic integration. Indeed, economic historian Kevin O'Rourke argues that "the most impressive episode of international economic integration which the world has seen to date were the years between 1870 and the Great War". Openness – that is, the share of trade in output – rose steadily,

from just 1 per cent in 1820 to 7.6 per cent in 1913 – a high point not surpassed until the 1960s (Maddison, 2001).

(iii) Global specialization – if not yet global value chains

While the late 19th century saw nothing as complex and sophisticated as today's global value chains, signs of growing international specialization, the "unbundling" of global production and the spread of foreign investment were already evident. With the arrival of steamships and railways, a vast range of commodities were suddenly accessible to the world's industrial centres, just as new manufactured goods began to flood the rest of the world.

Transoceanic trade in grains, metals, textiles and other bulk commodities – as well as in manufactured goods – became increasingly common in the latter half of the 19th century. Global trade and exchange rate stability encouraged massive outflows of foreign capital during this period – especially from Great Britain, which directed about half its savings abroad, but also from France and Germany. Much of this investment went into railway construction in the United States, Canada, Russia, Latin America and Asia, further strengthening economic integration and accelerating growth. The period 1870 to 1913 also saw large-scale international migration, with an outflow of 17.5 million people from Europe to the Americas and Australasia, further cementing global economic integration. The most striking feature of this emerging global economic system is that it was underpinned by simple – though fragile – rules and agreements, not by a network of international organizations designed to "manage" the world economy.

One of the key factors facilitating Europe's rapid industrialization throughout the 1800s was the vast amount of fertile land in the Americas which could be used to grow the large quantities of food needed to feed a fast-expanding European population, thereby allowing Europe's labour and land to be freed up for further industrialization (Pomeranz, 2000). Despite a fast-growing population and limited arable land, Great Britain saw food prices stop rising in the 1840s and start falling thereafter, helped by the abolition of the Corn Laws, which had imposed high duties on imported corn (O'Rourke and Williamson, 1999; O'Rourke and Findlay, 2007).

Declining food prices benefited industrial workers and urban consumers – helping to fuel further industrialization and urbanization – but disadvantaged landowners and farm labourers. By the 1870s, Great Britain's farm sector employed less than a quarter of its working population. Great Britain also absorbed over a quarter of the world's exports, mainly food and raw materials, and was the main exporter of manufactured goods as well as the largest provider of trade-related services, such as shipping, trade finance and insurance.

Just as farmers in industrialized countries faced increased competition from highly competitive agricultural producers in the New World, developing-country artisanal and craft

producers increasingly found themselves out-competed by more capital- and technology-intensive producers in the fast-industrializing North, often protected behind tariff walls, e.g. the 1690-1721 Calico Acts which shielded Great Britain's textile industry from surging Indian imports (Bairoch and Kozul-Wright, 1996). It may be an exaggeration to argue, as does economic historian Paul Bairoch, that massive inflows of European manufactured goods, particularly of textiles and clothing, resulted in the "deindustrialization" of the developing world, but there is no question that the latter half of the 19th century saw the continued consolidation of the North's manufacturing dominance. The destruction of India's textile industry was a striking example but a similar process was taking place in China, Latin America and the Middle East (Bairoch and Kozul-Wright, 1996). According to Bairoch, the developing world saw its share of global manufacturing fall from over a third to less than a tenth between 1860 and 1913 (Bairoch, 1982). Only after the turn of the 20th century did the North's growing manufacturing dominance over the South begin to reverse.

(iv) *The industrialized core converging – but the core and the periphery diverging*

This "first age of globalization" was less than global in its scope. As the early industrializing countries pulled ahead of the pre-industrial rest (Pomeranz, 2000), a new and uneven global economic landscape began to emerge, defined by a European "core" increasingly focused on manufacturing, and the largely colonial "periphery" supplying raw materials (O'Rourke and Findlay, 2007).

Although commodity specialization brought significant economic benefits – Argentina and Mexico, for example, had among the world's highest growth rates in the second half of the 19th century – for many others, economic progress was modest or non-existent. China, which had the world's largest economy in 1820, saw its per capita GDP actually shrink by over 1 per cent a year between 1870 and 1913. India, other Asian economies and Africa performed marginally better, but still per capita income rose by just a quarter during this period (Maddison, 2001). Meanwhile, the industrialized countries' access to cheaper raw materials and vast markets for their manufactured goods allowed them to advance at a much greater pace, both economically and technologically, than the rest of the world. In 1860, the three leading industrial countries – Great Britain, Germany, and the United States – were producing over a third of total global output; by 1913 their share was a little under two-thirds of a much larger total. In 1820, the richest countries of the world had a GDP per head of about three times the poorest; by 1913, the ratio was ten to one (Maddison, 2001).

(c) *The inter-war interregnum – disaster strikes and development stalls*

Global integration reversed between 1914 and 1945, the result of a series of related political shocks to the international system – war, depression and economic nationalism. This, in turn, caused economic development

largely to stall in many regions and, in Europe, to go backwards. The world economy grew much more slowly than in 1870–1913, world trade grew much less than world income, and the degree of inequality between regions continued to increase (Maddison, 2001). There were exceptions, however. Although the United States and the British "dominions" suffered significant war casualties and the diversion of resources into the war effort, they were spared many of the most destructive aspects of the conflict and benefited from supplying Europe with armaments, munitions and resources. Meanwhile Latin America and Africa were only mildly affected by the disruption of world trade, and in fact benefited from the temporary dislocation of European commodity suppliers.

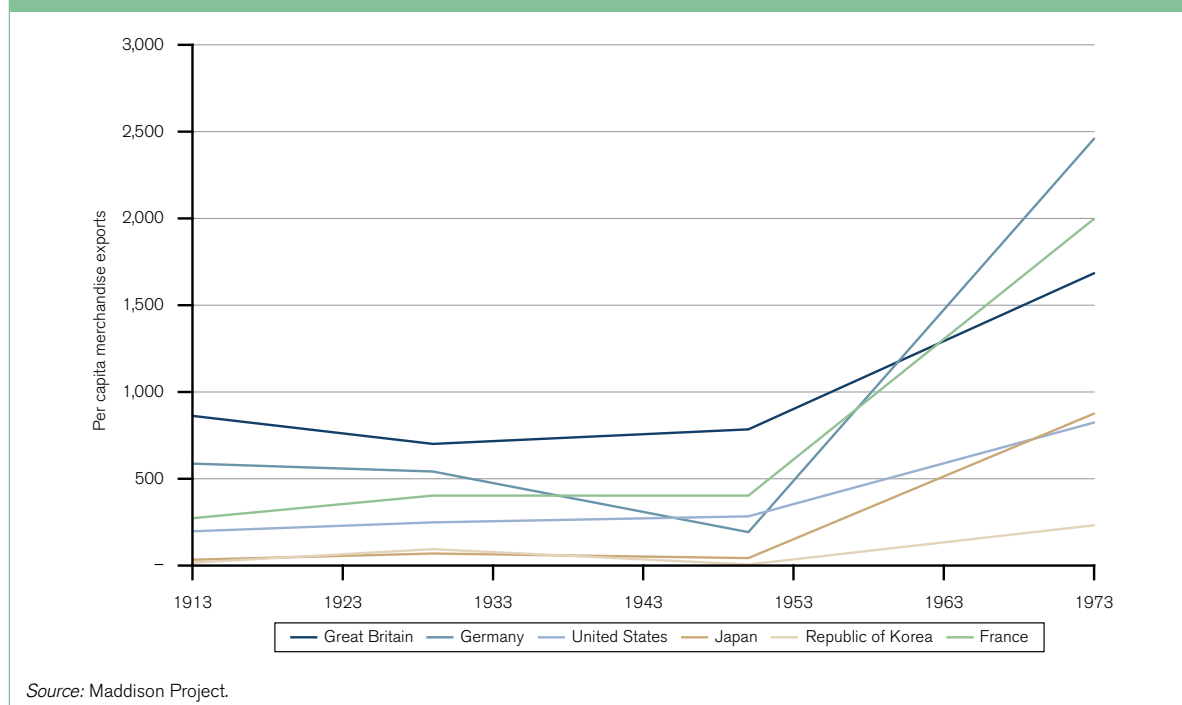
The First World War was an unmitigated disaster. Sixteen million died and another 20 million were wounded. In the war's aftermath, Germany faced huge reparations payments and France lost two-thirds of its foreign investments, while Great Britain suffered major losses to its merchant shipping fleet, liquidated much of its overseas investments, and accumulated massive foreign debts. Frontiers were dramatically redrawn in Europe, as Germany's territory was reduced and the Austrian, Russian and Turkish empires were dismembered, creating new tariff barriers and currency areas, upsetting transport routes and generating massive problems of dislocation and adjustment. The war caused a drop in GDP across most Western European countries, with the biggest falls in Belgium, France and Austria. Western Europe's pre-war levels of GDP were not regained until 1924.

Nonetheless, the world made some tentative progress towards rebuilding the pre-war order with a return to the gold standard in 1925 and the launch of new bilateral trade negotiations in 1927. However, this progress, fragile at best, was soon shattered by the Great Depression of 1929-33. A series of policy mistakes in response to the 1929 Wall Street stock market crash quickly translated into widespread debt default, a massive flight of capital from Europe to the United States, and collapsing global demand. Thanks to the United States' ill-conceived Smoot-Hawley tariff legislation of 1929-30 – which massively increased US tariffs on imported goods – it also led to the collapse of open trading.

A wave of trade protectionism unleashed by the US tariff increase, and exacerbated by falling import prices, saw the volume of world trade fall by more than a quarter over the following years; its 1929 peak was not reached again until 1950 (Eichengreen and Irwin, 2010). The economic downturn was most severe in the United States because of the collapse of its financial system, but the Depression's impact was felt throughout Europe and the Americas. World GDP fell further during the Depression than it had during the First World War. By undermining international cooperation and fuelling the rise of militaristic regimes in Germany, Italy and Japan, the Depression also laid the groundwork for the outbreak of the Second World War.

The Second World War was even more devastating than the First, leaving over 80 million dead, much of Europe and

Figure A.3: Per capita merchandise exports for selected economies, 1913-73
(1990 US\$)



parts of Asia destroyed, and the international economy in ruins. It also led to civil war in China, and the beginnings of the disintegration of the British, Dutch and French empires. However, the experience of other regions was very different. In the United States, for example, output doubled during the war years (at growth rates of 13 per cent a year) as the large slack in the economy after the Depression was mobilized behind the war effort. Latin America's output increased by nearly a quarter, boosted by war-fuelled demands for its commodity exports, and output also grew in Asia and Africa.

(d) The second development wave – a post-war “golden age” of growth

The second wave of economic development ran from the immediate post-Second World War era until the early 1970s – the so-called “golden age” of prosperity – with world GDP growing by 4.9 per cent a year and world trade growing by an even more impressive 7 per cent. The United States grew at over 2.5 per cent a year, consolidating its position as the world's economic and industrial leader but European countries achieved even faster growth rates reflecting the huge scope both for recovery from depression and war and for catch up to the technological advances of the United States (see Figure A.3).

However, the most dramatic economic story during the golden age was the rapid rise of newly industrializing economies in East Asia, which quickly closed the gap with the advanced West. Japan, the “miracle” developing economy of its era, grew at an astounding 10 per cent a year on average between 1950 and 1973 – comparable to the spectacular growth rates recently achieved by China – partly because

it was recovering from the war, but mainly because it was catching up with the industrial leaders (Takatoshi, 1996). Its successful export-led ascent provided a model for the subsequent rise of Asia. In some respects the Republic of Korea's economic growth trajectory was even more extraordinary because it lasted longer. Among the world's poorest economies after the Korean War of 1950-53, the Republic of Korea was recording annual growth rates of 10 per cent a year in the early post-war decades, 9 per cent in the 1970s and 1980s, and 6.6 per cent in the 1990s – the fastest sustained growth rate in history – fuelled in no small part by even faster growing trade. The ratio of its merchandise exports to GDP rose from 0.7 per cent in 1950 to 36.3 per cent in 1998 (Wolf, 2004). Other Asian “tigers”, such as Chinese Taipei, Hong Kong (China) and Singapore, also advanced at similarly unprecedented rates. This resulted not only in an expansion of the industrial “core”, but in a further widening of the gap between the rich world and the pre-industrial poor.

China, which had endured 12 years of war between 1937 and 1949, barely grew at all in the 1950s and 1960s. Although Africa started in 1950 with a per capita GDP slightly higher than Asia's, its per capita income grew the slowest during the golden age, at just 1.8 per cent. Latin America, which had done better than any other region during the inter-war years, also grew more modestly during the golden age, in part because of more restrictive trade regimes.

(i) A new international economic order

The post-war era saw a rapid return to trade growth. This was due in large part to the new international economic order established after the war – anchored in the

International Monetary Fund (IMF), the World Bank, the General Agreement on Tariffs and Trade (GATT) and the Organisation for Economic Co-operation and Development (OECD) – which underpinned the gradual restoration of open trade after its collapse in the inter-war years.

Although the Cold War divide destroyed the wartime dream of building a universal economic system, this divide, and the security concerns it raised, reinforced solidarity and cooperation within the Western alliance, and encouraged countries to hold in check the economic conflicts and beggar-thy-neighbour policies that had proved so disastrous in the 1930s. The United States assumed the leadership role it had largely avoided in the inter-war period, not only by designing the post-war order, but by providing a substantial flow of aid for Europe, encouraging open trade policies and fostering cooperation. Until the 1970s, it also provided the world with a strong anchor for international monetary stability. North-South relations were also gradually transformed, turning from colonial dominance and exclusion to a greater focus on development and financial aid, reinforced by Cold War interests.

In addition to the Cold War divide, however, the gap between the advanced and the developing world continued to widen – leading to what economic historian Lant Pritchett describes as “divergence, big time” (Pritchett, 1997). The biggest beneficiaries of the post-war open trade were the advanced economies, especially Europe and newly industrializing Asia, where trade growth averaged 8.6 and 8 per cent a year respectively. Latin America, with its greater resistance to trade opening and reliance on domestic production rather than imports, benefited less from trade's unprecedented expansion. Africa enjoyed higher export growth than Latin America but significantly lower than the United States, Europe or newly industrializing Asia. Meanwhile, the Soviet bloc and China purposely isolated themselves from the increasingly open and integrated world economy.

(ii) The technological revolution continues

Fast-expanding post-war trade was also a reflection of further technological advances in transport and communications, many of which were fuelled by the war. Innovations in transoceanic shipping included the development of turboelectric transmission mechanisms and the replacement of coal-fired plants with diesel engines. In 1914, coal-burning steamships made up almost the entire world merchant fleet. By the 1920s, this had fallen to only 70 per cent; then to less than 50 per cent in the 1930s; and to only 4 per cent by 1961. The closure of the Suez Canal in 1956-57, and again in 1965, prompted the shipping industry to invest in huge, specialized bulk freighters and oil tankers as well as in the harbour facilities needed to handle them, as a way of reducing the costs of longer shipping routes. The biggest modern super-tankers are more than 30 times the size of their post-war predecessors, and bulk freighters have grown almost as quickly, making it more economical to move commodities and other low-value-to-weight goods over great distances.³

The introduction of container ships after the 1960s also drove down ocean bulk shipping costs, although some of the gains in the 1970s and 1980s were offset by rising fuel prices. According to economic historian David Hummels, prices for ocean shipping, which were largely unchanged from 1952 to 1970, increased substantially from 1970 to the mid-1980s, then steadily declined over the next two decades (Hummels, 2007). Railway networks also expanded rapidly, including between the two world wars, especially in developing economies, while diesel and electric locomotives increasingly replaced steam engines. Mass adoption of motor vehicles also began in the inter-war period, and transformed passenger travel and overland haulage. Initially limited to transporting passengers in urban areas, large motorized trucks were soon being used on feeder routes to the main railways lines, and eventually competed with those lines. Air freight represented yet another major transportation breakthrough that began with rising wartime demand, leading to a ten-fold decline in air shipping prices since 1950. As a result, according to Hummels, air shipping has grown from an insignificant share of trade in 1950 to a third of US imports by value and half of US exports outside of North America today (Hummels, 2007).

(iii) The rise of multinational enterprises – laying the groundwork for globalized production

A central feature of the post-war economic landscape was the growing importance of multinational enterprises (MNEs), fuelled by a surge in foreign direct investment. MNEs are not a 20th-century invention. Transnational firms, such as the Dutch East India Company or the British East India Company, played key roles in Europe's colonial dominance of Asia and other regions from the 18th century. Growing transport, trade and investment links in the 19th century only accelerated this trend. However, in the decades after the Second World War, MNE activity expanded most dramatically, thanks to US commercial dominance and the increasing internationalization of trade and especially investment, which grew more rapidly (though also more erratically) than either production or international trade after 1945.

US MNEs heavily dominated foreign investment activity in the two decades after the Second World War but European and Japanese corporations also began to play ever-greater roles. Most of the huge expansion in international investment took place among advanced industrial countries. However, MNE activity in developing countries also expanded throughout this period, with the stock of foreign capital rising from 4 to 22 per cent of developing countries' GDP between 1950 and 1973. As MNEs expanded their global reach and became more interconnected, business activity became increasingly internationalized – laying the groundwork for even greater international specialization and the rise of global value chains.

(iv) The great divergence grows greater

As the United States continued to grow, Europe rapidly recovered, and the Asian tigers raced to catch up, the

wealth and income gap between the advancing industrial countries and the developing world grew ever wider. By 1970, the world's richest countries had a per capita GDP 30 times higher than the poorest – compared with only a three-to-one differential a century before. Never before had the world experienced income and wealth differences on this scale (Pomeranz, 2000). The “great divergence” continued.

Some economists, most notably Raul Prebisch, argued that peripheral countries were trapped permanently in a cycle of under-development because of structural imbalances in the world economy, and that radical reforms to the international system and to national industrial policies were needed if the gaps between rich and poor were to be narrowed. Their proposals included shielding infant industries from foreign competition and encouraging inward investment and technology transfers – policies which, it was argued, many advanced economies had also employed to promote their economic and technological development. These ideas helped to shape a generation of developing countries' industrial strategies as well as the design of the GATT's so-called “special and differential” rules – including lower obligations, longer phase-in times and more beneficial market access – for developing countries after the 1960s.

(e) The third development wave – the age of globalization

Since the late 1980s, the world has witnessed a cycle of economic development, the largest so far (see Figure A.4). Its most striking feature is the dramatic growth trajectory of emerging markets, with the vertiginous rise of economic giants such as Brazil, China, India, Indonesia and the Philippines. While, from 1950 to 1973, Japan recorded super-growth of over 10 per cent a year, the rest of Asia only grew at 2.6 per cent. From 1973 to 2000, the rest of Asia grew twice as fast as Japan, and in the 1990s the region grew four times as fast.

Since the 1980s, seven Asian economies (China; Hong Kong, China; Malaysia; Singapore; the Republic of Korea; Chinese Taipei; and Thailand) have grown at an average rate of 8 per cent a year for more than 25 years (Growth Commission, 2008) – a scale and speed of development unmatched in history. Economic growth in the United States has been marginally slower since the early 1970s, at an average rate of 2.4 per cent, than in the post-war period. Europe's and Japan's rapid catch up to US per capita income levels during the golden age (between the Second World War and the early 1970s) had ended for most countries by the 1990s. Between 1973 and 1998, Western Europe's GDP grew by 2.1 per cent a year compared with 4.8 per cent between 1950 and 1972, and has grown even less in the first decade of the 21st century. Once again, expanding trade has both reflected and reinforced this period of global growth.

(i) *The post-war order goes global*

While the structure of the international system has not changed significantly since the post-war era, its scope

and composition have altered dramatically. The successful conclusion of the GATT's Uruguay Round and the creation of the WTO in 1994 were the culmination of a half-century of evolution, deepening existing rules and practices while bringing whole new sectors, such as services and intellectual property, into the rules-based trading system. Membership also expanded dramatically over this period. From just 23 members in 1947, the WTO has 160 members today – three-quarters of which are developing economies, including China and Russia.

(ii) *The rise of global value chains*

One prominent feature of today's more open and integrated world economy is the rise of value chains. Just as rapidly falling transport costs in the 19th century led to globalization's “first unbundling” – separating factories' locations from those of consumers – the newest wave of integrationist technologies (containerization, air freight, telecommunications, informatics) is leading to globalization's “second unbundling”, as Richard Baldwin describes it – the end of the need to perform most manufacturing stages near one another (Baldwin, 2011).

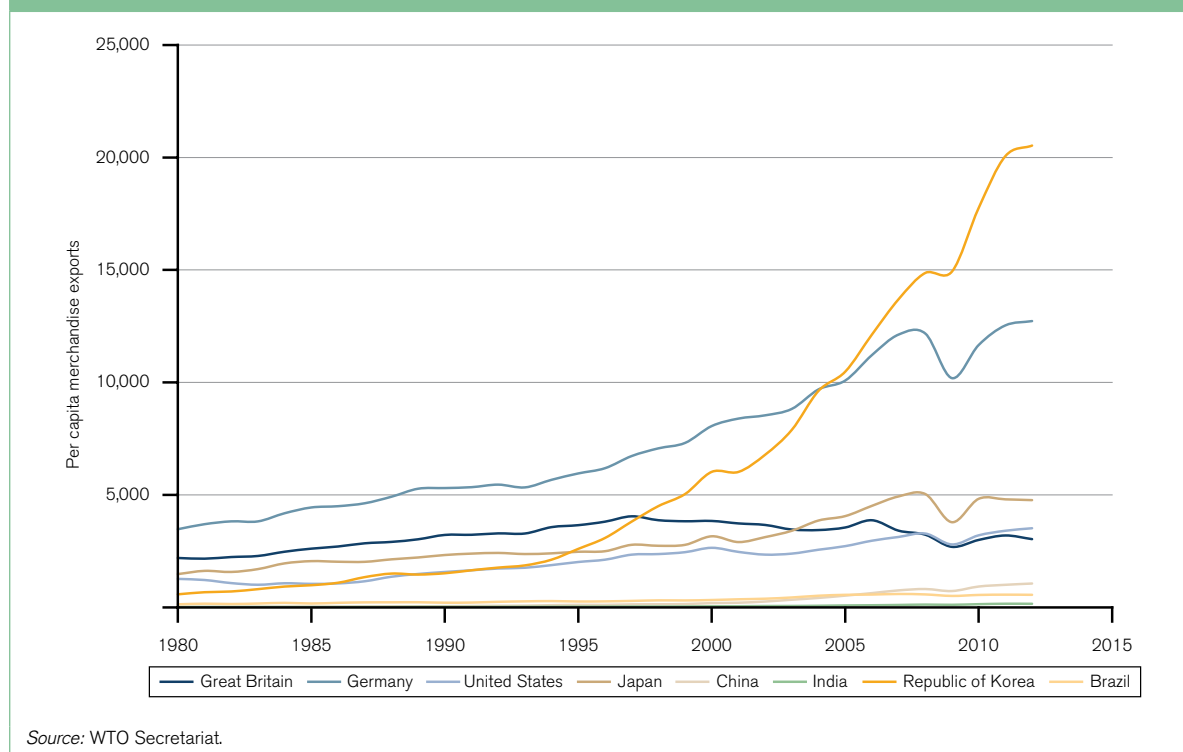
Manufacturing is increasingly managed through complex global supply chains, effectively world factories, which locate various stages of the production process in the world's most cost efficient locations. The proliferation of multinational enterprises, the global reach of which allows them to coordinate production and distribution across many countries, has been indispensable to this process. To enhance efficiency and to optimize profits, MNEs now locate research, development, design, assembly, production of parts, marketing and branding activities in many different countries around the globe. While in 1969 there were just 7,000 MNEs, by 1990 there were 24,000, and today that number has risen to 111,000 – a sixteen-fold increase (United Nations Conference on Trade and Development (UNCTAD), 2013). Cross-border trade between MNEs and their affiliates – or intra-firm trade – now accounts for the largest share of international trade in goods and services.

Global value chains not only have an impact on the strategy of firms, but on that of countries as well. Given that economies participating in value chains can only increase exports in direct proportion to the increase in imports, governments have a key role to play in establishing a policy environment that enhances and facilitates “connectivity”, including by unilaterally lowering trade barriers and reducing transaction and logistics costs. The growing importance of global value chains helps explain why China, for example, has emerged as the world's largest manufacturer over the past decade, its factories importing parts and components – mainly from East Asia but also from other economies across the globe – for assembly into final products.

(iii) *Resurgence of commodities?*

Rising demand for food and raw materials as a result of rapid industrialization and urbanization has fuelled a

Figure A.4: Per capita merchandise exports for selected economies, 1980-2012
(1990 US\$)



worldwide commodities boom, or super-cycle, that started in the late 1990s and peaked in 2011. Price rises have been widespread across all commodities but most notably in those commodities closely linked to China's rapidly expanding manufacturing and export sector. Some argue that long-standing terms of trade imbalances between manufacturing and commodity exporters are being reversed, and that the recent rise in commodity prices probably represents a deeper structural shift in the global economy that will continue to benefit developing economies. However, others argue that the commodity super-cycle is simply the most recent example of the typical boom and bust pattern that has always governed commodity prices and that signs of slowing demand and values – hastened by a cooling Chinese economy and growing US self-sufficiency in energy – are already evident.

(iv) A great convergence?

The last two centuries have been the most dynamic in world economic history. For many developing economies, recent decades were particularly favourable for growth – to the point that the “great divergence” appears to be giving way to the “great convergence”. In the space of a generation, China has become the world's second-largest economy and leading exporter, while India, Brazil, Indonesia and other emerging economies – representing half of the world's population – have also achieved historically high growth rates. As Michael Spence has argued, we are not at the end, nor the beginning, of a process but rather part way through an industrial revolution that is now entering its third century (Spence, 2011). This rapidly spreading advancing and accelerating process of development has been possible

because the world economy has become more open and integrated. Economic openness has, in turn, depended on the underlying strength and resilience of the international system – its ability to absorb rising giants, to withstand shocks, and to promote cooperation and coherence.

However, while global economic development and convergence are bringing enormous benefits and opportunities – not least to those in fast-emerging economies – they also carry cost and risks. The *World Trade Report 2014* evaluates these opportunities and risks created by the four main trade factors that are currently driving development – the rise of new economic powers, the spread of global value chains, the growing importance of commodities trade, and the deepening integration and volatility of the world economy.

Endnotes

- 1 In this report, emerging economies are a subset of developing economies including all non-developed G-20 members. Detailed country group definitions are provided in Appendix Table B.1.
- 2 This notion of broad phases of economic development draws extensively on the seminal work of economic historian Angus Maddison, (Maddison, 1998).
- 3 Whereas oil tankers averaged 16,000 deadweight tonnes (dwt) in the early 1950s, they averaged over 100,000 dwts by the 1990s – with modern “super-tankers” exceeding 500,000 dwts and capable of carrying over 3 million barrels of oil (Lundgren, 1996).

B. The increasing importance of developing countries in the global economy

One of the most striking features of the global economy in recent years has been the increasingly large role played by developing economies. This section examines how many countries recorded impressive growth in the last decade while making great strides in reducing poverty. Some have become leading producers and exporters of manufactured goods, agricultural products and commercial services, in some cases eclipsing the industrialized economies. This is especially true of the large developing economies which have taken on more prominent positions in international fora such as the G-20.

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Some key facts and findings

- Faster GDP growth in developing countries has increased their rate of convergence with developed countries in terms of per capita income in recent decades. However, developing economies are still much poorer than developed countries, and millions remain in poverty even in the most dynamic developing countries.
- GDP growth has moved hand in hand with integration in the world economy. The share of developing economies in world output increased from 23 per cent to 40 per cent between 2000 and 2012. The share of these countries in world trade also rose from 33 per cent to 48 per cent.
- G-20 developing countries have reduced their applied tariffs by over 5 per cent, committed to a “bound” rate or ceiling for over 80 per cent of their tariff lines, and reduced bound rates by about 10 per cent in the last decade.

However, despite significant progress made by developing economies overall, many countries remain desperately poor, and even the most dynamic developing economies still have large numbers of people living below the poverty line. Whether the economic success of recent years can be sustained in the future is also a matter of some uncertainty, since developing economies have never completely de-coupled from the developed countries whose economies have yet to fully recover from the financial crisis and global recession of 2008-09.

A variety of statistics on recent trends in development are presented in this section to shed light on the development landscape since the start of the millennium, and to clarify what distinguishes this period from earlier years. The discussion focuses on growth in GDP and per capita income, but other dimensions of development are also considered, including measures of human development (e.g. life expectancy, education, etc.), environmental degradation (e.g. emissions of CO₂ and other greenhouse gases), and inequality (e.g. poverty rates and Gini coefficients). Trade flows of developing economies are also explored, focusing on the enhanced export opportunities for least-developed countries as a result of the trade opening of large, dynamic developing economies.

In terms of terminology, grouping countries according to their level of development poses a challenge within a WTO context, since the WTO agreements allow preferential treatment for developing and least-developed economies in certain circumstances. The regional groupings used in this publication should not be interpreted as implying anything about a country's rights and obligations under WTO agreements, and should only be seen as broadly indicative of a country's status.

The country groups used in this report are loosely based on the United Nations Millennium Development Goals (MDG) classification, with countries categorized as either "developed" or "developing" (precise definitions of these groups are provided in Appendix Table B.1). "Developed economies" comprise all 27 member states of the European Union, other non-EU Western European countries and territories (principally Iceland, Norway and Switzerland), Australia, Canada, Japan, New Zealand and the United States.¹

All other countries and territories are collectively referred to as "developing economies".

Under "developing economies", we define three sub-groups:

1. "least-developed countries" (LDCs), which correspond exactly with the MDG definition,
2. "G-20 developing economies", which include the 11 non-developed members of the G-20, i.e. Argentina, Brazil, China, India, Indonesia, the Republic of Korea, Mexico, the Russian Federation, the Kingdom of Saudi Arabia, South Africa and Turkey. This group of large developing

countries was chosen due to the perception that the more widely used BRICs group (i.e. Brazil, the Russian Federation, India, China and sometimes South Africa) was too narrow and lacked regional representation.

3. "Other developing economies", which comprise all remaining countries.

The countries of Central and Eastern Europe, the Baltic States and the Commonwealth of Independent States (CIS)² used to be categorized as "transition economies". However, this group became less analytically useful after many of its members joined the European Union. We have chosen to include the remaining transition economies in the "developing economies" group because we wish to classify the Russian Federation as a "G-20 developing economy" and because of its similarity in economic structure to other large, middle-income countries.

Other country groupings may also be used from time to time as needed – for example, to denote geographic regions or income levels.

1. Worldwide convergence in GDP

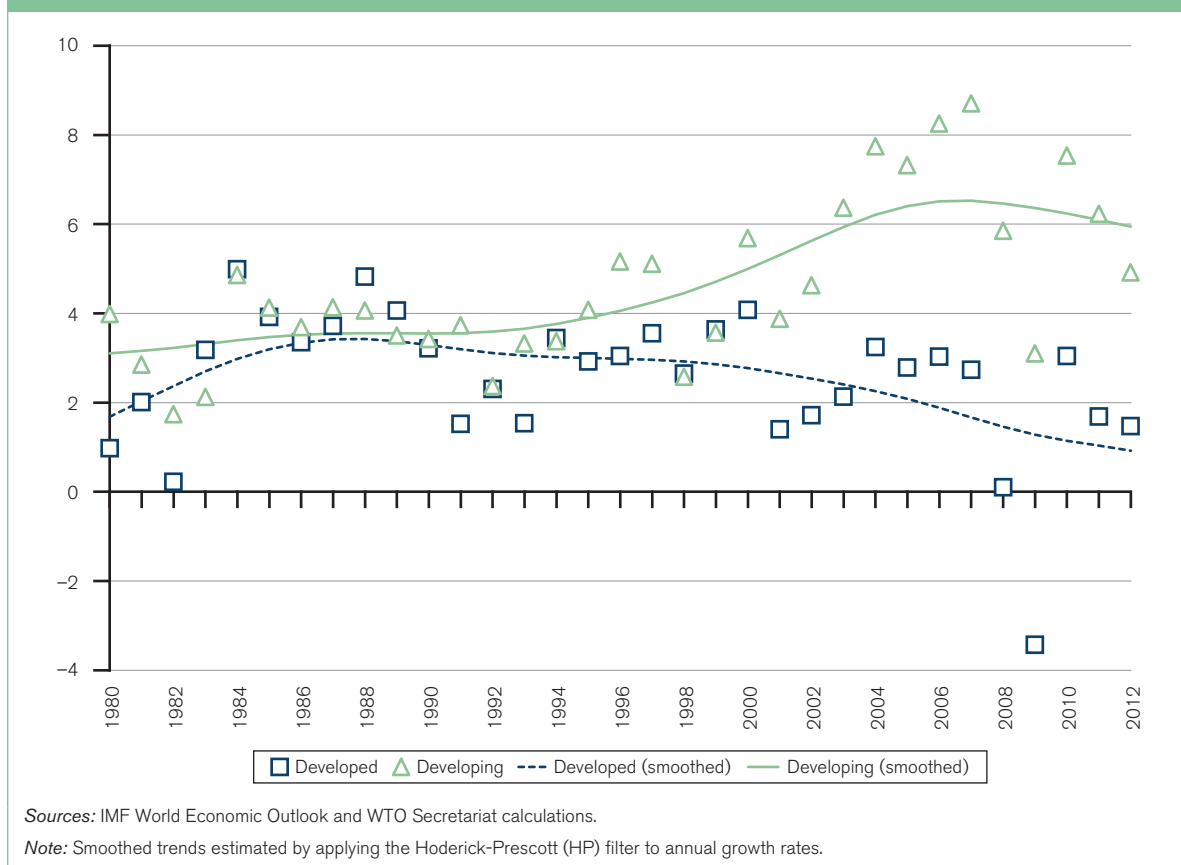
Economic growth and development tend to be viewed as long-run phenomena that are better measured in decades rather than years. However, many development indicators appear to have altered their trajectory since around 2000, with low- and middle-income countries gaining on the mature industrial economies in terms of per capita income and other measures of quality of life. The performance of G-20 developing economies has been especially impressive compared with developed economies and with LDCs and other developing economies. Recently, G-20 developing economies have seen output growth slow, however. This is partly due to weak demand in developed markets, but domestic structural issues have also played a part.

Since the start of the millennium, developing economies have increased their rate of convergence with developed economies as a result of both faster growth in the developing world and slower growth in developed economies. This trend was magnified by the global financial crisis, although the process started much earlier. This part of the report presents a number of facts on growth to illustrate this convergence.

(a) Strong growth in developing economies since 2000

From the early 1980s until the late-1990s, developing economies did not grow appreciably faster than developed countries and in some years grew more slowly, largely due to a prolonged period of weakness in prices of primary commodities that developing countries export disproportionately. Recent evidence points to convergence since 2000, with large developing economies such as

Figure B.1: GDP growth at constant prices by level of development, 1980–2012 (annual percentage change)



Sources: IMF World Economic Outlook and WTO Secretariat calculations.

Note: Smoothed trends estimated by applying the Hodrick-Prescott (HP) filter to annual growth rates.

China and India regularly posting double-digit growth rates, and exporters of natural resources benefiting from large increases in commodity prices. Figure B.1 shows these growth rates for developed and developing economies since 1980 and the overall trends for each group. The data suggest that developing economies are once again narrowing the income and wealth gap between themselves and developed countries.

Small differences in GDP growth across countries can produce dramatic divergences in living standards over time. For example, a country that sustains a 3 per cent per capita GDP growth rate for many years can expect to see its income double in 23 years, whereas another country that only manages to grow by 1.5 per cent per year will have to wait 47 years to experience the same doubling of income. Changes in per capita income are also affected by the rate of population growth but this tends to evolve slowly in most developed and many developing countries.

(b) Diverging rates of income convergence among developing economies

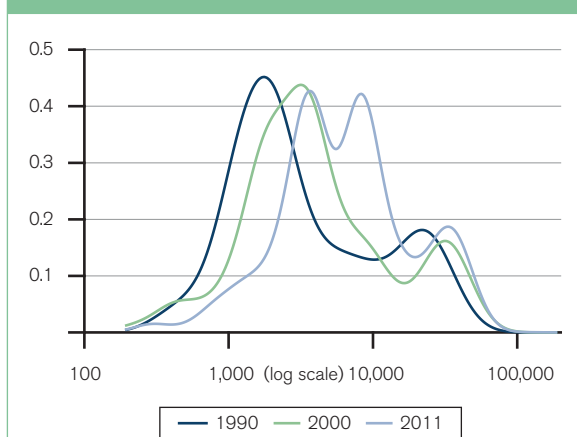
Figure B.2 shows the distribution of countries according to average per capita income at purchasing power parity (PPP)³ weighted by population in 1990, 2000 and 2011.

The figure shows that there are relatively few countries with extremely low per capita incomes (e.g. less than US\$ 1,000 in 1990) and relatively few with extremely high incomes (e.g. over US\$ 35,000 in 1990). The data show multiple peaks corresponding to clusters of low-, middle- or high-income countries.

The fact that the tallest part of the 1990 distribution occurs at a per capita income of around US\$ 1,800 means that several countries with large populations had per capita incomes around this value (in 2005 US\$ at PPP). The smaller peak to the right represents the high-income countries whose per capita incomes clustered around US\$ 22,000 in 1990. Between 1990 and 2000, the distribution of incomes for both high-income and low-income countries shifted to the right, meaning per capita incomes increased, but the distribution retained its dual peaked (i.e. “bi-modal”) shape.

Incomes in low-income countries rose more in percentage terms between 1990 and 2000 than incomes in high-income countries, with the centre of mass for low-income countries moving to around US\$ 3,300 and the peak for high-income countries rising to roughly US\$ 30,000. However, between 2000 and 2011 the low-income countries experienced even greater increases in per capita incomes, while incomes in high-income countries changed

Figure B.2: Kernel density of real GDP at PPP weighted by population, 1990–2011 (logarithmic scale)



Source: Penn World Tables 8.0 and Secretariat calculations.

Note: This figure shows the distribution of countries according to average per capita income at purchasing power parity (PPP) weighted by population in 1990, 2000 and 2011, using a mathematical algorithm known as a kernel density estimator. Essentially, this technique produces a smoothed frequency distribution for a collection of data. In the case of per capita income data, it shows which income ranges contain the most countries/people and which contain the fewest. Observations are weighted by population to provide a better indication of the distribution of incomes across persons, since otherwise small countries (e.g. Gambia, Qatar) would have the same weight as large ones (e.g. China, India).

very little, providing evidence of convergence between developed and developing countries. Interestingly, a number of middle-income countries have begun to converge with high-income economies at an even faster pace. As a result of this change, the distribution of world incomes showed a three-peaked (i.e. “tri-modal”) shape in 2011.

As there are now fewer countries with incomes below US\$ 8,000 and more with incomes above US\$ 9,000, this suggests that income inequality between countries probably went down between 2000 and 2011. However, this measure fails to account for income variation within countries. This additional source of variation must also be taken into account when attempting to measure inequality for the world as a whole.

Sala-i-Martin (2006) and Pinkovskiy and Sala-i-Martin (2009) have produced estimates of global income distribution from 1970 to 2006 which reflect both inequality within countries and between countries. This research finds that most of the inequality at the global level is between countries and that global Gini coefficients – a measure of inequality – have fallen from 0.65 in 1990 to 0.63 in 2000 and to 0.61 in 2006. Measures of poverty using multiple poverty lines have declined steadily over time.

Further evidence of convergence in per capita income between developing and developed countries can be seen in Figure B.3, which shows the evolution of incomes by level of development between 1990 and 2011. The

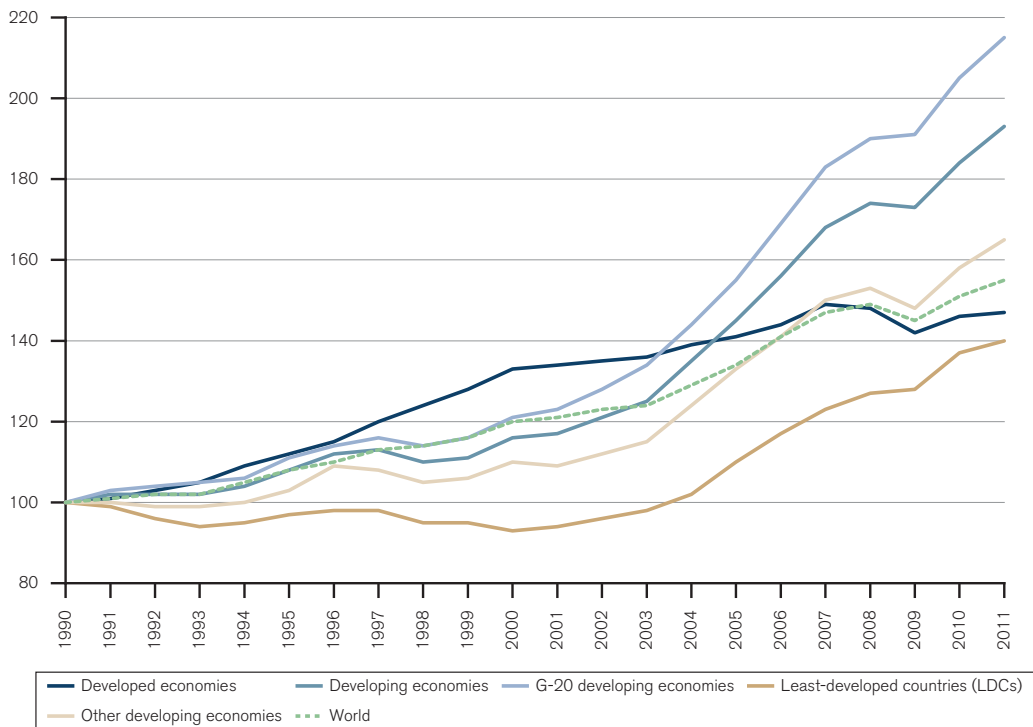
chart shows that in 2011 the total percentage increase in average per capita incomes for developed economies since 1990 was less than the world average, whereas developed economies’ incomes had risen more than the world average as recently as 2006. G-20 developing economies, LDCs and other developing economies all appear to have risen sharply in terms of per capita incomes since 2003. Between then and 2011, developing economies as a whole saw their average per capita income rise by 54 per cent. Over the same period, incomes of G-20 developing economies, LDCs and other developing economies advanced 61 per cent, 43 per cent and 43 per cent respectively. This stands in sharp contrast to the 1990 to 2000 period, during which incomes in LDCs declined by 7 per cent, and those in other developing countries recorded growth below the world average.

GDP growth in excess of population growth in the 1990s and 2000s should have raised per capita incomes in most developing economies. Figure B.4 shows that this is indeed the case. The chart shows a diversity of economic performance between developed economies, G-20 developing economies, LDCs and the world between 1990 and 2011. Although output per head has stagnated in developed economies in recent years, these countries remain much wealthier than most developing economies. For example, despite China’s rapid economic growth over the last 20 years or so, it remains relatively poor compared with developed economies and the world as a whole. China’s per capita income in 2011 was just 24 per cent of the average for developed economies, and 76 per cent of the world average. India’s per capita GDP at PPP was just 11 per cent of the average income in developed economies and 35 per cent of the average world income. LDCs have an average income of just 4 per cent of the average income in developed economies and 11 per cent of the world average income.

The Republic of Korea is the most conspicuous success story among the countries shown in the chart, having more than doubled its per capita income (up 260 per cent) over a 21-year period. Other countries, however, had growth setbacks. These include Argentina, which went through a debt/currency crisis in the late 1990s, and Brazil, which saw its per capita income stagnate between 1997 and the mid-2000s.

When incomes are converging, countries with lower initial per capita GDP tend to grow faster than those that are already relatively wealthy. This is shown in Figure B.5, which displays per capita income growth between 2000 and 2012 in G-20 developing economies and LDCs as well as their incomes as a percentage of the average for developed countries in 2000. The chart shows that countries with low starting incomes (e.g. India had around 5 per cent of the average income in developed economies in 2000) have tended to grow more rapidly in the last decade (e.g. India grew more than 6 per cent per year on average during this period).

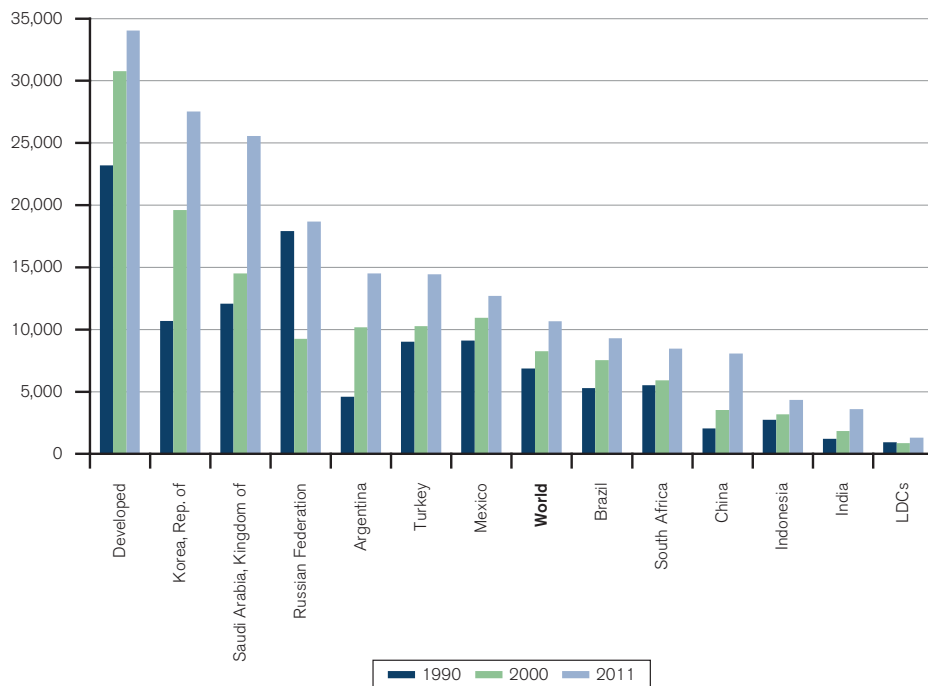
Figure B.3: Per capita real GDP of selected economies, 1990–2011
(indices of 2005 US\$ at purchasing power parity)



Source: Penn World Tables 8.0.
Note: GDP figures are expenditure-based.

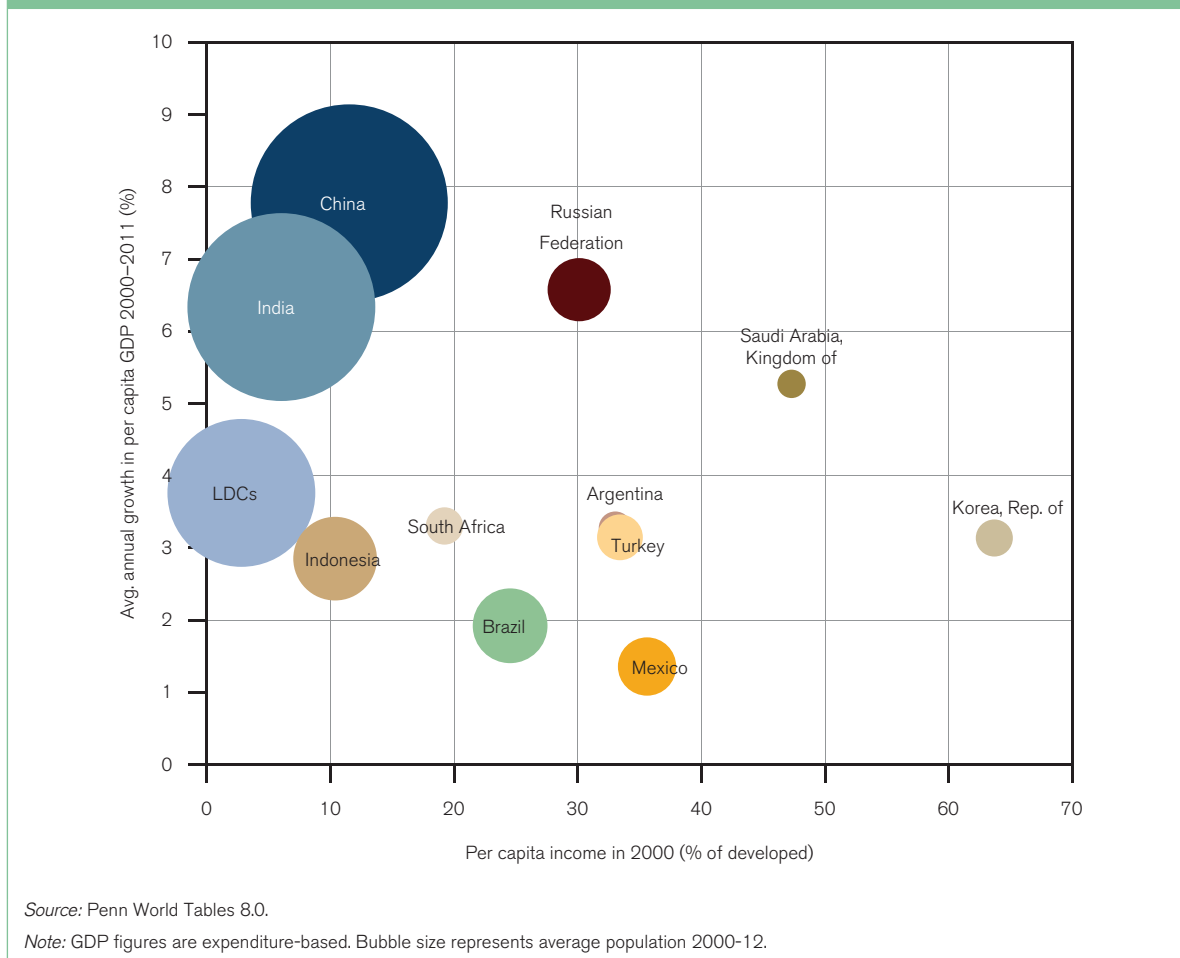
B. THE INCREASING IMPORTANCE OF DEVELOPING COUNTRIES IN THE GLOBAL ECONOMY

Figure B.4: Per capita GDP of G-20 developing economies and LDCs, 1990–2011
(2005 US\$ at purchasing power parity)



Source: Penn World Tables 8.0.
Note: GDP figures are expenditure-based.

Figure B.5: Convergence in per capita incomes of G-20 developing economies and LDCs, 2000–12 (per cent and annual percentage change)



2. What factors determine growth?

Clearly, development is not just about growth. However, GDP growth helps to generate the economic resources needed to improve people’s living conditions. To improve water safety and access to good health and education, housing and food, for example, a country needs resources. Economic growth can generate these resources. In fact, there tends to be a positive link between human development indexes and GDP per capita. The relationship between growth and development is, however, not automatic, and a government needs to respond with appropriate policies to tackle any social or environmental concerns that may arise.

(a) Resources, technology, institutions and trade

GDP per capita grows for two reasons. The first is when countries accumulate resources, including investments in physical capital, such as machinery or infrastructure, and investment in human capital, such as on-the-job training to enhance workers’ skills. The second is when countries

utilize these resources more efficiently. Technologies, the institutional framework or geographical characteristics are key determinants of the ways in which resource endowments are utilized and therefore how a country’s GDP grows.

One development strategy is, therefore, to favour investments and accumulate capital. The fast-growing countries in the 1950s experienced a growing share of investment in GDP. However, at a certain point, continuing to endow workers with capital goods will not generate further growth (due to diminishing returns to capital). In other words, additional capital will become redundant. In their theoretical model of growth, Solow (1956) and Swan (1956) show that sustained growth in output per capita can only be achieved with continuous advances in technological knowledge. Growth through capital accumulation only cannot be sustained.

To be sustainable, investment-led industrialization needs to be complemented by investment in education or research and development (R&D). Whether targeted at introducing a new product or a new production technology, investment in R&D will prevent investments from running

Table B.1: Sources of economic growth in developing economies, 1990–2000 and 2000–12
(annual percentage change, per cent, and indices –2.5 to 2.5)

	Quartiles of per capita GDP growth 1990–2000				Quartiles of per capita GDP growth 2000–12			
	Quartile 1	Quartile 2	Quartile 3	Quartile 4	Quartile 1	Quartile 2	Quartile 3	Quartile 4
Per capita GDP growth rate (annual percentage change)	–4.7	–0.1	2.0	5.8	–0.1	2.3	4.1	7.6
Investment share in GDP (per cent)	19.2	20.6	23.3	28.9	20.8	21.5	24.4	26.5
Primary school enrolment rate (per cent)	64.5	77.5	79.4	88.1	80.0	87.3	87.2	85.7
Secondary school enrolment rate (per cent)	27.8	52.0	47.0	57.4	48.9	56.0	62.9	60.7
Ratio of trade to GDP (per cent)	30.5	48.5	42.4	43.6	41.8	46.2	45.3	46.2
FDI inflows / GDP (per cent)	2.1	2.5	3.0	4.8	4.7	5.8	4.9	6.0
Regulatory quality index (–2.5 to 2.5)	–0.8	–0.4	0.1	0.1	–0.3	–0.1	–0.2	–0.5
Rule of law index (–2.5 to 2.5)	–1.0	–0.5	–0.1	0.1	–0.5	–0.2	–0.2	–0.6

Source: Penn World Tables 8.0 for per capita GDP, Worldwide Governance Indicators (WGI) for regulatory quality and rule of law indices, World Development Indicators (WDI) for other variables.

Note: The trade to GDP ratio is defined as the average of exports and imports divided by output. WGI data are reported bi-annually from 1996 to 2000 and annually from 2002 to 2012.

into diminishing returns to scale. For example, if the R&D conducted by a firm allows it to introduce a new or higher-quality good which can be sold at a higher price, it is profitable for the firm to invest in producing it: innovation creates new investment opportunities. At the same time, the prospect of making profits by introducing new products motivates further R&D. This virtuous cycle in which capital investment and R&D feed into each other generates sustained growth (Grossman and Helpman, 1991).

A similar virtuous cycle can arise when innovation leads to increased productivity of capital and labour. Romer (1986 and 1990) formalizes this in a model in which technological innovation takes the form of new intermediate goods. In this framework, the growing number of inputs raises productivity because it allows increasing specialization of labour across an increased variety of activities, thus preventing diminishing returns to capital.

Recent economic literature has emphasized the role of institutions for sustained growth. The quality of institutions (e.g. contract enforceability, property rights, rule of law) is crucial in determining a firm's incentive to invest in human and physical capital or R&D. For example, a well-known argument for innovation is that new technologies provide market power and that firms' investments in R&D are motivated by the prospect of higher future profits derived from this market power (Schumpeter, 1942). In this context, the enforcement of property rights is a crucial determinant of the process of technological development and subsequent growth. Since firms under-invest in R&D when property rights are not enforced, economies with low institutional quality tend to grow more slowly than economies with higher institutional quality (Acemoglu, 2008; Helpman, 2004).

Opening up to trade also affects GDP growth. On the one hand, trade liberalization raises GDP because it improves resource allocation by allowing specialization according to comparative advantage and exploitation of economies of scale. On the other hand, open economies also tend to grow faster because trade sustains investment and innovation, fosters international technological spillovers and may trigger institutional reforms.

Table B.1 illustrates the evolution of some important determinants of long-run growth, including the share of investment in GDP, rates of primary and secondary school enrolment, the ratio of trade to GDP and the ratio of inflows of foreign direct investment (FDI) to GDP, regulatory quality and the rule of law. Regulatory quality refers to the perceived ability of governments to formulate and implement policies that promote economic growth in the private sector. Rule of law refers to the perceived quality of contract enforcement, the courts and the police, including the prevalence of crime and violence. These indicators are averaged over developing economies in two periods, 1990–2000 and 2000–2012, with countries grouped into quartiles based on their average rates of per capita GDP growth in each period. The first (bottom) quartile includes the countries with the lowest rates of per capita GDP growth while the fourth (top) quartile includes the economies with the highest growth rates.

The table highlights some notable features of the growth of developing economies over the last two decades. All quartiles recorded faster growth in the post-2000 period than in the 1990s. The countries with the slowest growth in per capita GDP in the first period saw their incomes contract by 4.7 per cent per year on average, whereas the bottom quartile in the second period recorded an average

decline of just 0.1 per cent per year. Meanwhile, per capita income growth in the second, third, and fourth quartiles was around 2 age points higher in the second period than in the first.

Faster income growth was associated with higher levels of investment, schooling, trade and FDI in both the 1990s and 2000s, although the top quartile in the later period had lower levels of both primary and secondary school enrolment than the third quartile. Measures of institutional quality (i.e. regulatory quality and rule of law) increased with per capita GDP in the 1990s but decreased during the 2000s, to the point that the top quartile actually recorded the lowest scores for both regulatory quality and rule of law.

(b) Trade and growth

The case for free trade typically rests on the existence of gains from trade. Most economists agree that the effect of trade liberalization is to increase real GDP, while acknowledging the possible relevance of the costs of adjusting to trade opening. Opening up increases a country's GDP because it improves the efficiency of its resource allocation. First, trade allows each country to specialize in the production of the goods that it can produce more cheaply and import the other goods, thus exploiting comparative advantages. Secondly, by extending the size of the market in which the firm operates beyond national borders, trade allows firms to exploit economies of scale. Thirdly, trade selects the most productive firms in the market.⁴ The relationship between trade and growth is discussed further below (see Box B.1).

The positive relationship between trade and growth is illustrated by Figures B.6 and B.7. Figure B.6 shows that a rising share of world trade in GDP has been accompanied by rising per capita GDP since 1980. Whether GDP growth caused trade to grow faster or trade caused GDP to accelerate is difficult to establish with any degree of certainty. It is most likely that it runs both ways. However, Figure B.6 reveals an important long-run relationship between trade and GDP.

Figure B.7 shows real per capita GDP growth plotted against export growth since 2000. The strength of this relationship may be exaggerated by the fact that exports are a component of GDP. However, other measures of trade openness also consistently show a positive, if somewhat weaker, relationship between trade and growth.

Figure B.8 shows the average annual percentage change in GDP in two periods, 1990-2000 and 2000-11. It shows that world output grew faster in the last 11 years than it did in the preceding ten and that all categories of developing economies experienced faster growth in

the second period. The fastest average growth in the post-2000 period was recorded by oil-exporting LDCs (6.6 per cent per year on average, up from 1.2 per cent in the 1990s), thanks in part to rising prices of primary commodities in recent years. However, the performance of G-20 developing economies (some of which are natural resource exporters) was nearly as impressive (5.2 per cent per year on average, up from 3.9 per cent in the preceding decade).

LDC exporters of agricultural products also saw their incomes grow at an impressive 3.9 per cent per year since 2000 after recording a dismal performance in the 1990s, when incomes contracted by about 1.3 per cent per year (see also Section D).

Only developed economies recorded slower average growth in the 2000s than in the 1990s (0.9 per cent compared with 2.8 per cent), which may be partly explained by the global financial crisis that disproportionately affected advanced economies. However, even if we restrict ourselves to the pre-crisis period, i.e. 2000-2008, we see that advanced economies still grew more slowly in the 2000s (2.0 per cent vs. 2.8 per cent).

3. Rising share of developing countries in the world economy

Faster-than-average output growth raises countries' shares in world GDP over time. This is shown in Figure B.9, which illustrates the increasing share of developing economies in world GDP at purchasing power parity. These countries raised their collective share in global output from 39 per cent in 2000 to 52 per cent in 2012. Much of the increase was due to the G-20 developing economies, which increased their share in exports from 25 per cent to 36 per cent. China alone more than doubled its share from 7 per cent to 15 per cent. India recorded a more modest increase from 4 per cent to 6 per cent over the same interval while Brazil was unchanged at 3 per cent and Mexico dropped from 3 per cent to 2 per cent. All LDCs combined still only accounted for around 2 per cent of world exports in 2012, up from 1 per cent in 2000.

Although Figure B.9 suggests that living standards are indeed improving in developing economies, it does not accurately reflect their importance as export destinations. This is because a country's ability to purchase imports depends more on its nominal dollar income than on income at purchasing power parity. From this perspective, the share of developing economies in world output rose to 40 per cent from 23 per cent between 2000 and 2012. This is a large increase but it illustrates that developing economies are still responsible for less than half of world income.

Figure B.10 illustrates the increasing share of developing economies in world merchandise exports

Box B.1: How does trade affect growth?

Opening up to trade affects long-run growth through several channels. First, trade can affect growth by affecting the return to capital accumulation. Models that analyse the interaction between international trade and economic growth show that, unlike a closed economy, a small open economy can sustain extensive periods of growth with capital accumulation only. If a small open economy adopts policies that foster investment, it can accumulate capital without experiencing falling rates of returns on investments because these are determined in the world market (by factor price equalization) and are unaffected by the investment decision in the small open economy. Ventura (1997) explains in this way the growth of East Asian “tiger” economies in the 1970s and 1980s.⁵

Secondly, trade can affect growth through its effects on the incentive to innovate. In this context, what matters is the effect of trade on market size, competition and knowledge spillovers. Typically, opening up to trade increases the size of the market that a firm faces (scale effect). This increases the reward to R&D because it increases the revenues associated with introducing a new good and, in turn, the incentive to invest in R&D. Therefore, growth increases (Rivera-Batiz and Romer, 1991; Grossman and Helpman, 1991).

Enhanced competition generated by trade has two contrasting effects on the incentive to innovate. On the one hand, competition augments firms' incentive to invest in R&D. Otherwise, firms are displaced from the market (Peretto, 2003; Aghion et al, 2005). On the other hand, competition lowers the incentive to innovate because it reduces the monopoly rents of the successful innovator. Empirical evidence supports an overall positive relationship between competition and the incentive to innovate, thus supporting an overall positive relationship between trade opening and growth through this channel.

Trade can also affect firms' incentive to innovate through its effects on knowledge spillovers. Trade can enhance knowledge spillovers because it gives access to the knowledge embodied in the good produced abroad. Trade in transport and communication services may reduce the cost of exchange of information. FDI may contribute to technology transfers through on-the-job training. If discoveries made in a foreign country increase R&D productivity in the home country (knowledge spillovers), domestic firms have a higher incentive to innovate. This will translate into higher growth.

Finally, trade can have positive effects on growth through its effect on the institutional framework. Often trade liberalization goes hand in hand with the adoption of external commitments. Trade liberalization often takes place in a multilateral or regional context. Countries that enter a trade agreement not only commit to lower their trade tariffs but also embrace a certain institutional framework. For example, membership of the WTO also requires countries to comply with certain transparency rules in trade policy as well as certain rules regarding behind-the-border measures, such as technical regulations, subsidies or property rights. Empirical work (Rodrick et al. 2004) supports the idea that international trade improves the institutional framework, and that a commitment to opening up to trade through WTO membership boosts growth (Tang and Wei, 2009).

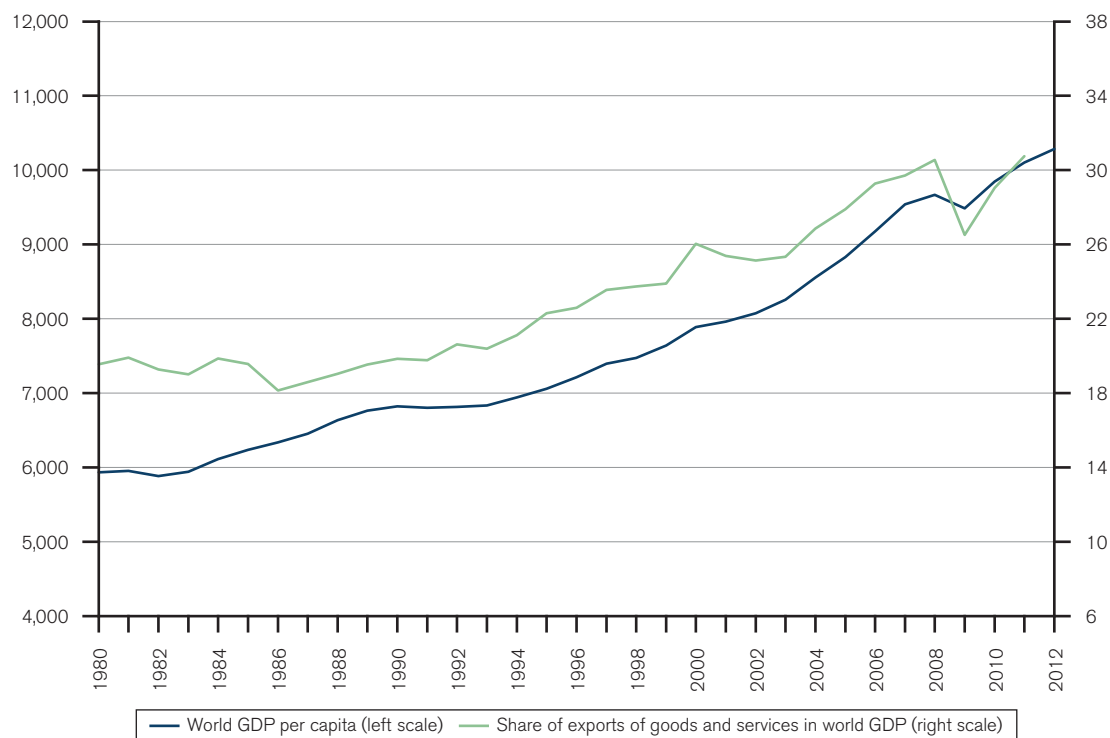
Overall, the core message of the economic models outlined above is that international trade boosts growth. However, theoretical literature highlights situations where the static gains from trade can come at the cost of lower long-run growth. The main argument here relies on the existence of learning-by-doing in specific sectors and not in others; that is, experience accumulated in a specific sector of the economy drives overall productivity.

Suppose that there are two countries, North and South, and two goods, agriculture and manufacturing. Suppose as well that learning-by-doing only characterizes the manufacturing sector. When these two countries open up to trade, the North will specialize in the production of the manufacturing good and the South in the production of the agricultural good. However, since only the manufacturing sector exhibits a high potential for growth, the North will grow faster under free trade while the opposite will occur in the South.

Two empirical findings reduce the importance of this theoretical argument. First, comparative advantages change over time. All export-led growth success stories have been characterized by a shift of the production structure away from agriculture into manufacturing – for example, Hong Kong (China), the Republic of Korea, Singapore and Chinese Taipei. Secondly, international trade may be associated with knowledge spillovers. Therefore, it is possible – contrary to what is assumed in the model – that knowledge developed in the North transfers to the South.

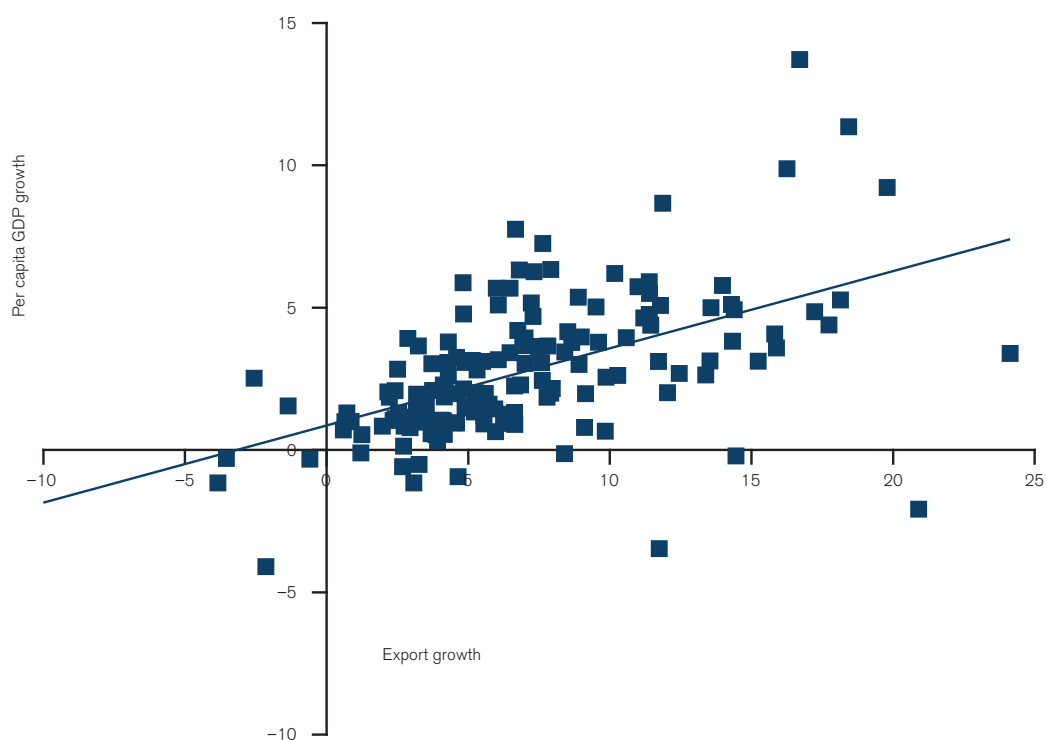
In developing countries, where domestic innovation is low, international diffusion of knowledge is particularly important for growth. Most importantly, a general result of the economic literature is that even when negative effects of trade on growth exist, provided that there are large knowledge spillovers, the ultimate effect of trade on growth is positive.⁶

Figure B.6: World GDP per capita and share of exports of goods and services in world GDP (2005 international dollars and percentage)



Source: World Bank World Development Indicators.

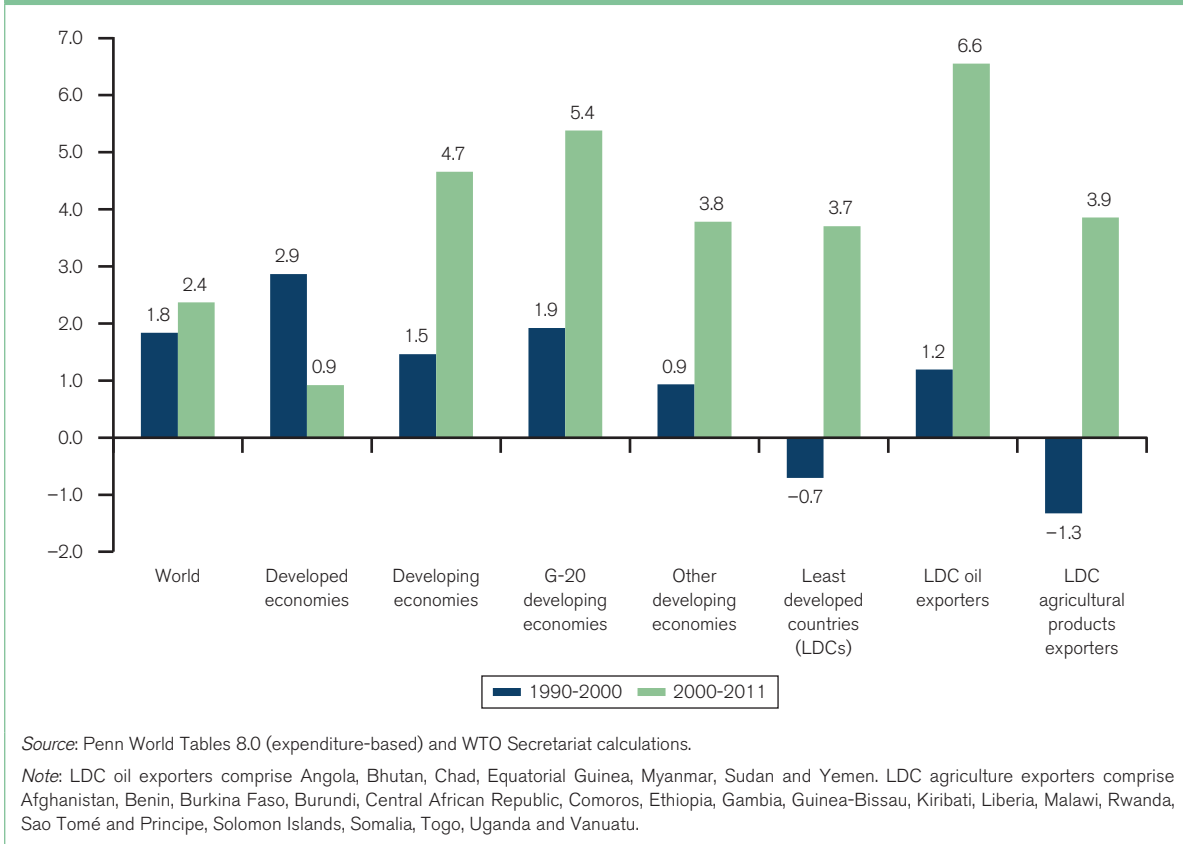
Figure B.7: Real per capita GDP growth and merchandise export volume growth, 2000–11 (average annual percentage change on both axes)



Source: World Bank World Development Indicators and WTO Secretariat calculations.

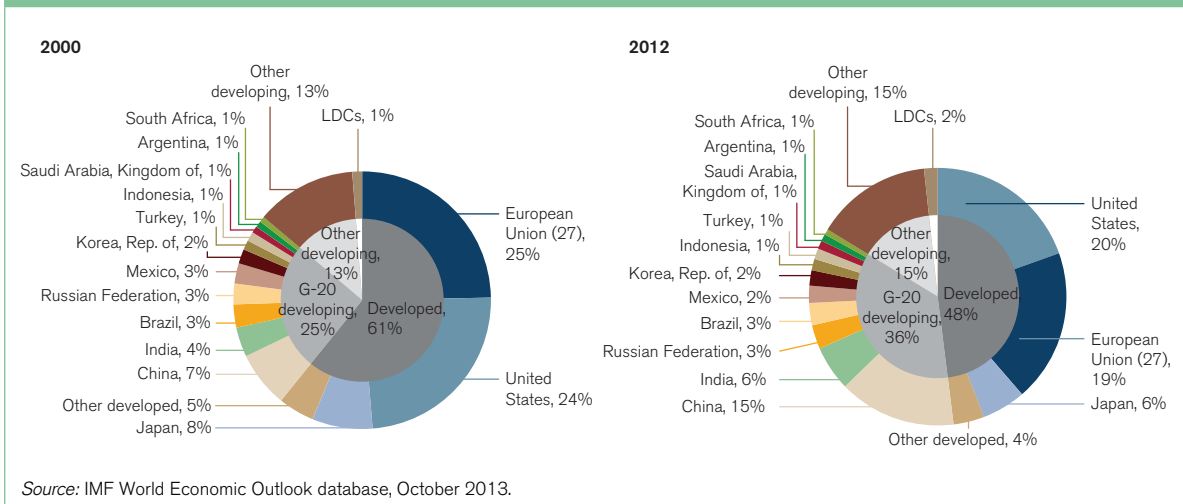
Note: Growth rates are averaged over the period.

Figure B.8: Average annual growth in per capita GDP at purchasing power parity by level of development, 1990–2011 (annual percentage change)



B. THE INCREASING IMPORTANCE OF DEVELOPING COUNTRIES IN THE GLOBAL ECONOMY

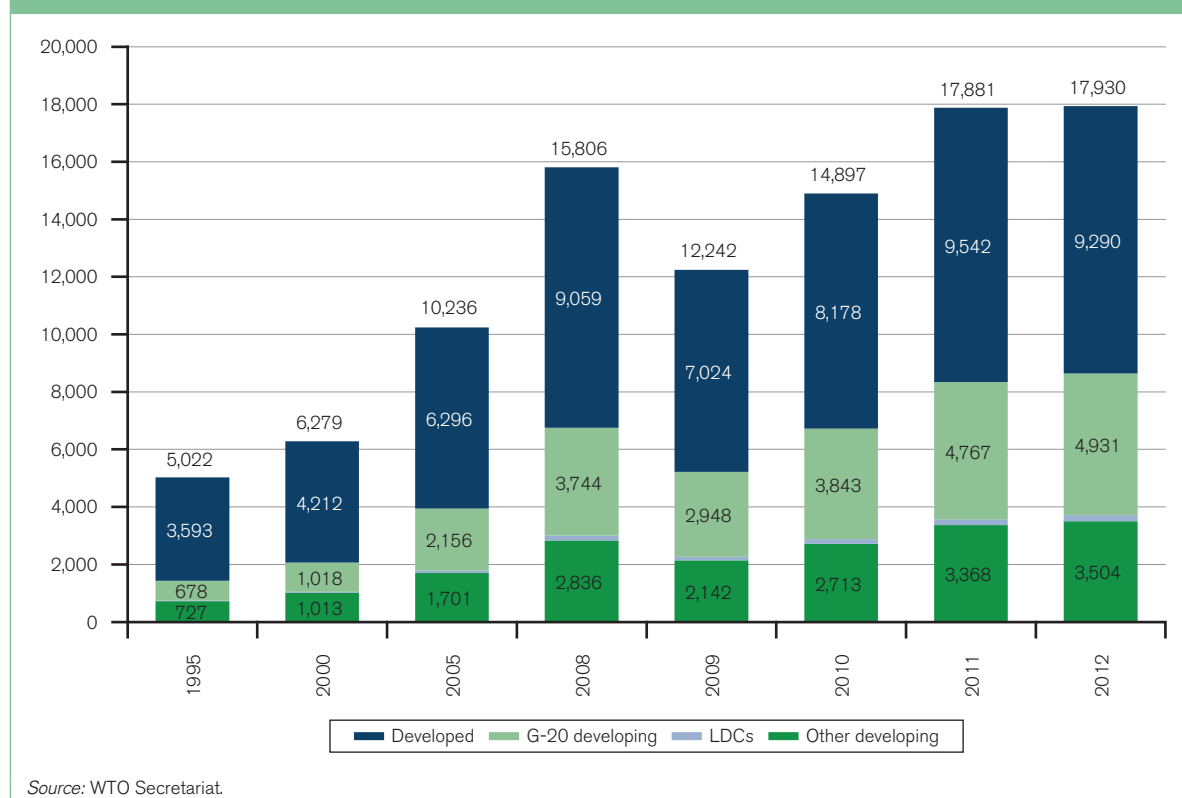
Figure B.9: Shares of selected economies in world GDP at purchasing power parity, 2000–12 (percentage)



since 1995 (qualitatively similar shares can be observed on the import side as well). The share of G-20 developing economies in world exports increased between 1995 and 2000 from 13 per cent to 16 per cent. However, between 2000 and 2012 this share leapt to 28 per cent despite the global financial

crisis in 2009. The share of LDCs in global exports was negligible throughout the entire period but the share of other developing economies rose from 16 per cent in 1995 to 20 per cent in 2012. Collectively, the share of developing economies increased from 33 per cent to 48 per cent over this period.

Figure B.10: Evolution of world merchandise exports by level of development, 1995–2012 (US\$ billion)



4. Heterogeneity of development experiences

As stated, growth is just one aspect of development. If rising output and higher incomes did not allow people to obtain a better standard of living, development would not be worth pursuing. The evidence suggests that per capita GDP growth does improve several dimensions of quality of life, but these gains are not uniformly distributed. In this section, we measure various aspects of development and development policy, using a human development index (excluding GDP per capita), an income inequality measure (Gini) and an environment quality index.

(a) Human development indicators and income growth

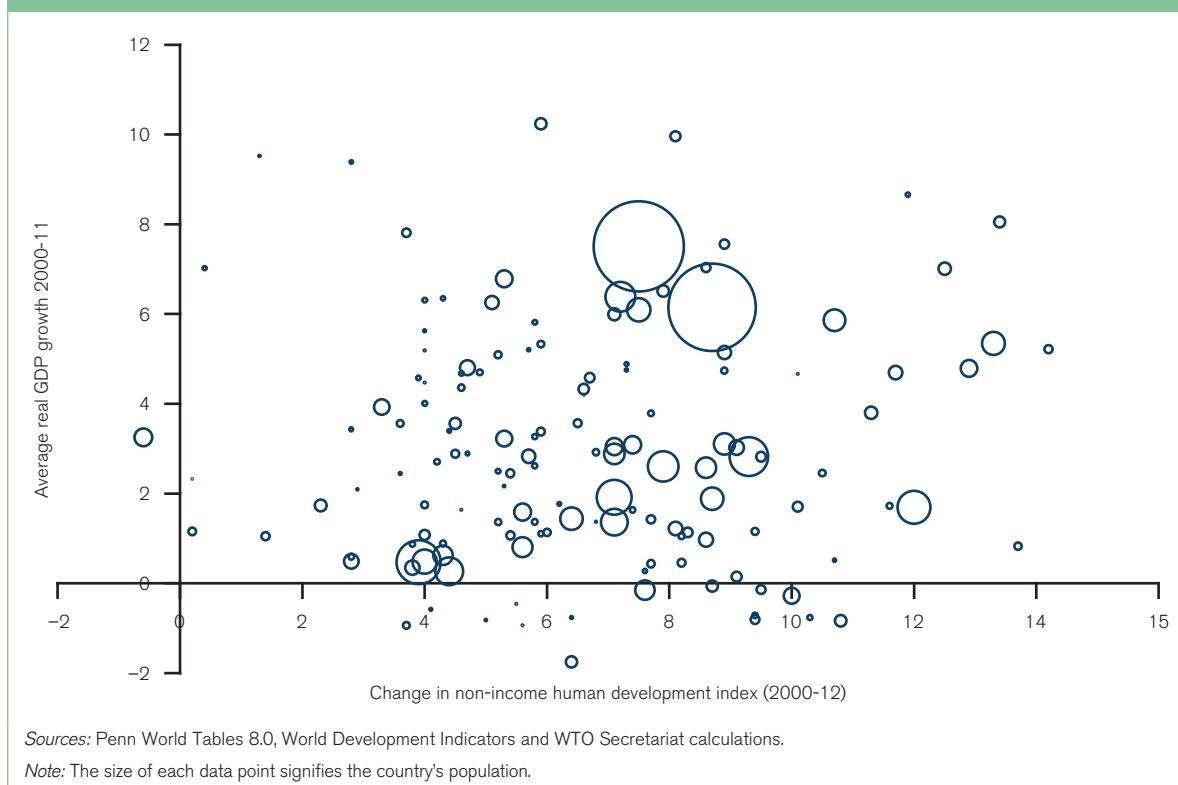
Exploring the relationship between growth and living standards could be undertaken in many ways. Common measures of well-being include health (e.g. life expectancy at birth, infant mortality), nutrition (intake of calories, incidence of disease), and opportunity/social mobility (literacy rates, economic and gender inequality, etc.). Examining each of these indicators separately would duplicate much of the work in the Millennium Development Goals Report (2013) so this report focuses on a composite indicator in the form of the World Bank's Human Development Index (HDI). Box B.2 discusses how close we are to attaining the

Millennium Development Goals. The standard version of this index combines life expectancy at birth, average years of schooling and per capita gross national income but this report uses an alternative version that excludes income in order to avoid comparing like with like.

Appendix Table B.2 includes combinations of output growth and human development performance for all available countries. It shows that countries with above average growth in output do not always have above average changes in human development scores (representing positive improvements in human development). This is confirmed by Figure B.11, which shows a positive relationship between HDI scores and GDP between 2000 and 2012 but only when weighted by population. When countries are not weighted in this way, there appears to be no relationship at all between HDI and GDP growth.

The lack of a strong link may be partly due to the fact that the data only cover a ten-year period whereas improvements in human development may take longer to emerge. A stronger relationship may also be obscured by the economic idiosyncrasies of extremely small countries, which can suffer from circumstances ranging from being landlocked to being remote from other larger economies. Population weighting also gives a great deal of weight to China and other large developing economies, which experienced fast growth in the 2000s while also improving their human development scores.

Figure B.11: Real per capita GDP growth and changes in human development, 2000–12 (per cent and change in non-income human development index)



(b) Growth and inequality within countries

Countries may achieve high rates of economic growth without the benefit being felt by many of their citizens if growth results in a more unequal distribution of incomes and wealth within those countries. Inequality between countries is also undesirable, because it means that one's birthplace has a bigger impact than merit on one's future opportunities and quality of life. Finally, the global income distribution is significant in its own right since it is equally important to lift poor people out of poverty irrespective of where they live.

Figure B.13 illustrates the relationship between income growth and changes in income inequality in developing economies between 2000 and 2011. Income growth is measured by the average per capita GDP growth while inequality is indicated by changes in the Gini coefficient.⁷ The size of each data point denotes the country's population so we can distinguish any trends between large and small countries.

Among the countries that have grown the fastest since 2000, some have raised their Gini index scores while others have reduced them. A positive change in the Gini index means that the country's income distribution has become more unequal while a negative change means that it has become more equal. The chart shows a cluster of large countries with relatively slow growth and negative

Gini changes, indicating a mildly positive relationship between growth and inequality. However, if we ignore population weighting, there does not appear to be a systematic relationship between per capita GDP growth changes and income inequality.

What explains these patterns? Economists have discussed for some time the existence of the so-called Kuznets curve. This is an inverted U-shaped curve that is intended to describe the relationship between income per capita and inequality. It is based on Kuznets' hypothesis that, as a country develops, income inequality worsens at first, then improves as the country attains a certain level of development. Kuznets' argument was that, at early stages of industrialization, wages are held down by the migration of rural people to the cities, and therefore GDP growth is accompanied by increasing inequality. Subsequently, when GDP per capita has reached a certain level, inequality falls because the rise of the welfare state allows for better redistribution policies.

Empirical evidence, however, does not support the existence of a Kuznets curve in inequality. The foremost example is the experience of rapid economic growth of certain East Asian countries (Hong Kong, China; Indonesia; Japan; the Republic of Korea; Malaysia; Singapore; and Thailand) between 1965 and 1990. Contrary to the Kuznets curve, these countries experienced rapid industrialization coupled with a rapid reduction in the number of people

Box B.2: How close are the Millennium Development Goals to being achieved?

World leaders met at the United Nations Millennium Summit in September 2000 to discuss the challenges of development in the 21st century. At the summit, the leaders adopted the Millennium Declaration, which identified eight goals that the international community should strive to achieve in order to “ensure that globalization becomes a positive force for all of the world’s people”.

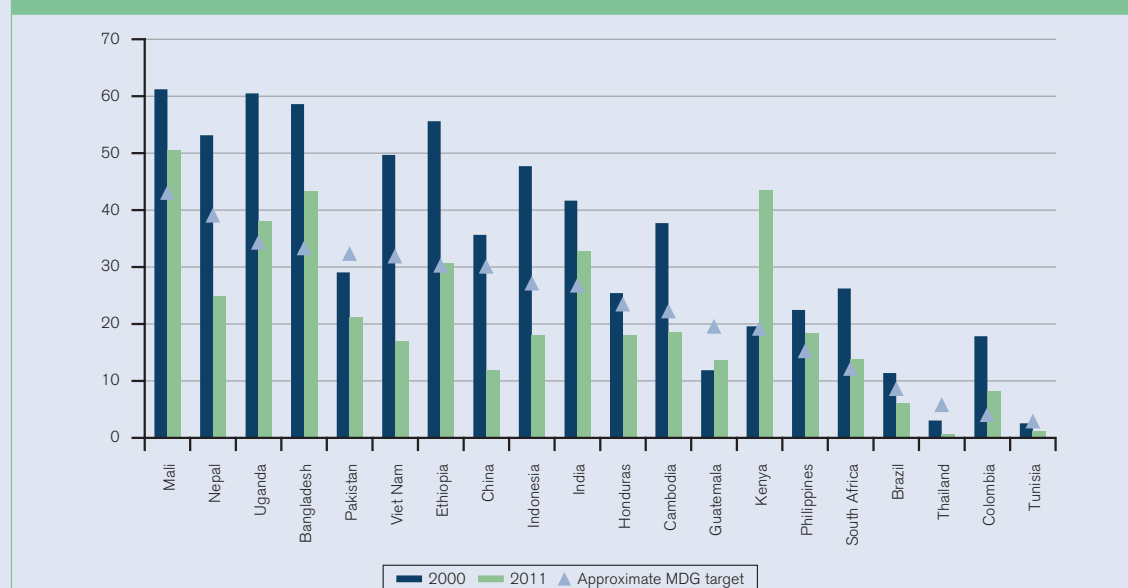
The Declaration recognized the unique challenges facing developing economies and stated that a sustained effort would be needed to make progress. The goals set out in the Declaration, known as the Millennium Development Goals (MDGs), were ambitious but in principle achievable by the target date of 2015. Since this deadline is now close at hand, it is instructive to review the progress made to date and to identify areas where work still needs to be done. This is summarized in Table B.2. Although the MDGs were intended to be both measurable and attainable, so far only the first (reducing the most extreme forms of poverty) has been comprehensively addressed.

Table B.2: Progress towards achieving the MDGs

Target	Progress
1 Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day	This has been met but 1.2 billion people still live in extreme poverty
2 Achieve universal primary education.	If current trends continue, the world will not meet the goal by 2015.
3 Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015.	Steady progress has been made, but more targeted action is needed in many regions
4 Reduce child mortality by two-thirds.	Major gains have been made but efforts must be redoubled to meet the target.
5 Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio.	Maternal mortality has declined by nearly half since 1990 but still falls far short of the MDG target.
6 Halt and begin to reverse the spread of HIV/AIDS by 2015.	The incidence of HIV is declining steadily in most regions; however, 2.5 million people are newly infected each year.
7 Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources.	Forests are a safety net for the poor but they continue to disappear at an alarming rate.
8 Develop a global partnership for development.	With regard to trade, the decisions reached at the WTO's Bali Ministerial Conference in December 2013, while yet to be fully implemented, are a first step in concluding the Doha Development Agenda, but the remaining issues are still to be resolved

Source: Millennium Development Goals Report (2013).

Figure B.12: Share of population living in households below extreme poverty line, selected countries, 2000–11 (per cent)



Source: World Bank PovcalNet.

Note: Extreme poverty is defined as less than US\$ 1.25 per person per day. The MDG targets are set at 50 per cent of the 1990 figure.

Attaining the MDG targets at the global or the regional level may shift attention away from the difficulties that some countries are having in achieving them. Progress in halving the proportion of people living in extreme poverty, defined as having an income of less than US\$ 1.25 per day, is shown in Figure B.12 based on data from the World Bank's

Box B.2: How close are the Millennium Development Goals to being achieved? (continued)

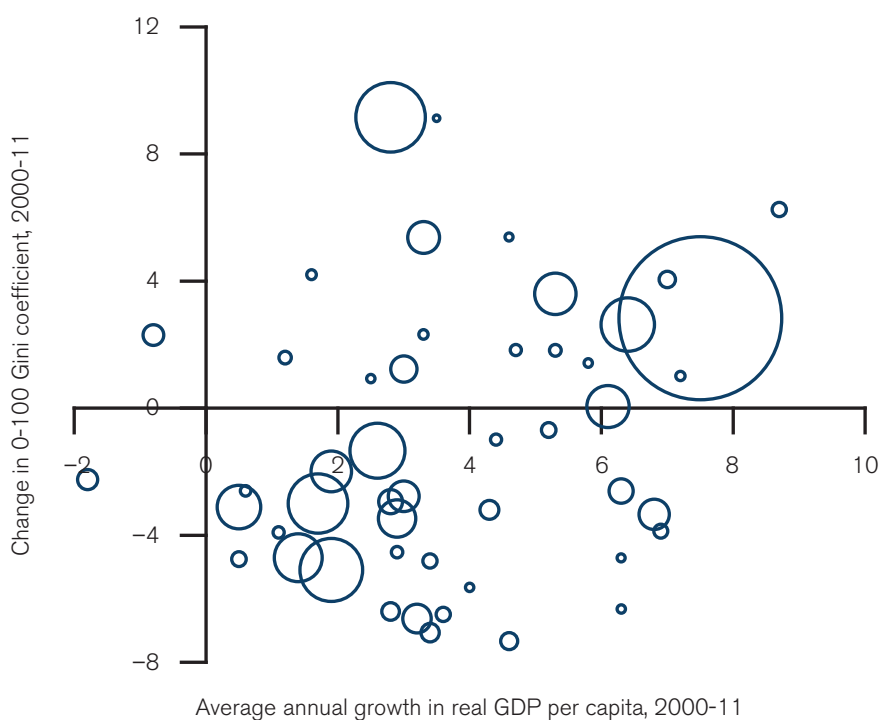
PovcalNet database. By 2011, some countries had managed to cut extreme poverty by more than half, well in advance of the 2015 deadline, while others remained far from achieving this.

Some countries have significantly exceeded their targets – notably China, Viet Nam, Pakistan and Nepal. However, the share of the population in extreme poverty has actually increased in a few African countries, notably Kenya and Zambia.

Trade can help to contribute to achieving several of the MDGs, especially the first (eradication of poverty and hunger) and the eighth (global partnership for development). Trade helps to achieve the first goal to the extent that greater access to international markets boosts exports, which contribute positively to GDP. Trade can also make firms in developing economies more efficient by giving them access to larger markets, thereby allowing them to take advantage of economies of scale. Imports can also help to reduce the burden of poverty by increasing competition and giving low-income consumers access to less expensive goods, both imported and domestically produced.

The main contribution of the WTO to the goal of developing a global partnership for development was intended to be the conclusion of the Doha Round of trade negotiations with an agreement that reflected developing country concerns. Although the Round has not yet been completed, the agreement reached at the Bali Ministerial Conference was a positive step in that direction.

Figure B.13: Per capita GDP growth and income inequality in developing economies, 2000–11
(average annual percentage change and change in Gini coefficient)



Sources: Penn World Tables 8.0 for real GDP, World Bank for Gini coefficients.

Note: The world average change in the Gini index between 2000 and 2011 was -1.3. The size of each data point signifies the country's population.

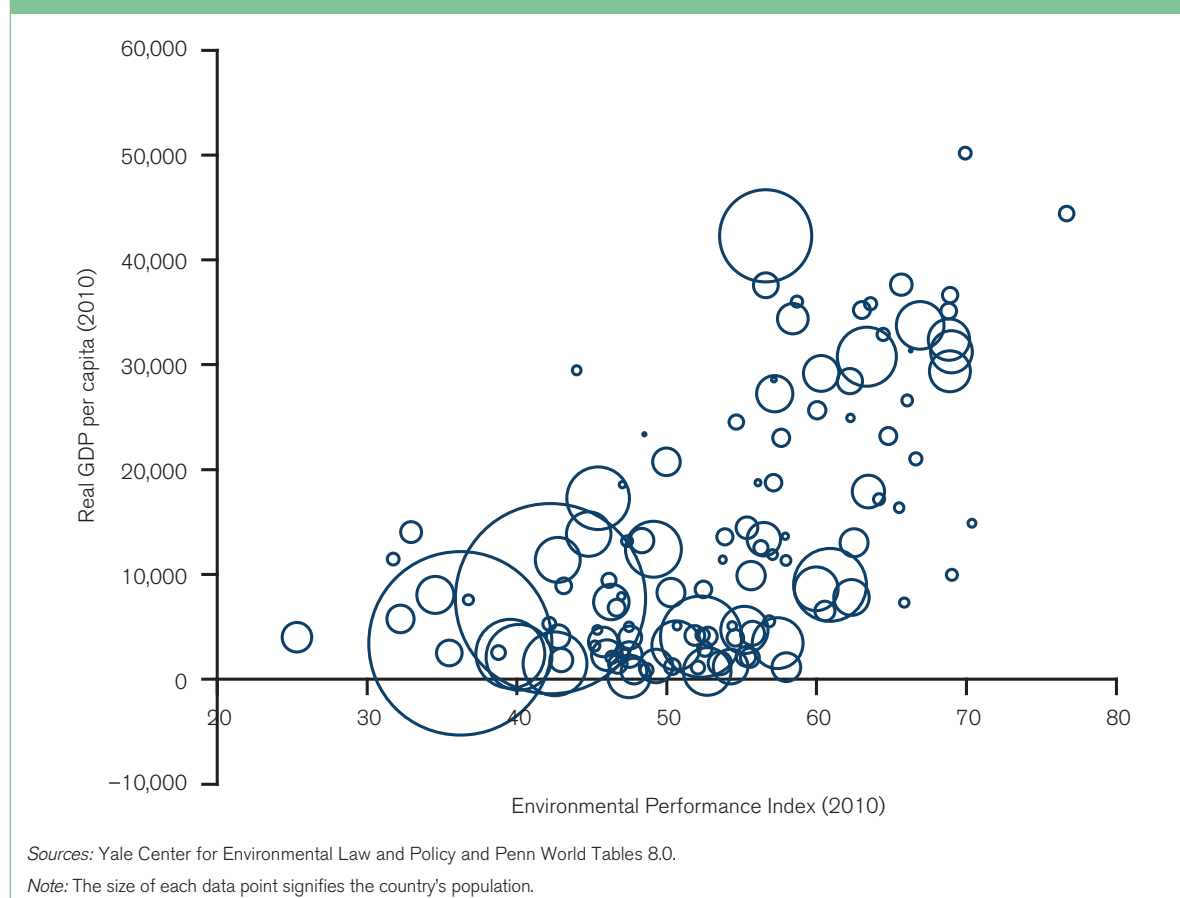
living in absolute poverty and reduced inequality. Most recently, the impressive growth of many Asian economies has proceeded together with a significant increase in the size of the middle class.

The specific reasons for economic growth and government policies at the country level explain the different growth and inequality trends. For example, a number of empirical

studies show that the relationship between GDP per capita and inequality mainly depends on technological changes. The main determinants of wage inequality in developing countries are skill-biased technological changes because they increase the relative wage of skilled workers.

Globalization and trade are often perceived to be a cause of inequality and job insecurity. Yet, recent evidence

Figure B.14: Real per capita GDP and environmental performance
(2005 PPP\$, weighted by population in 2010)



suggests that trade is unlikely to have had an impact on inequality through the traditional channels of shifting demand for production factors (Haskel et al., 2012). Inequality is principally driven by technological changes, increased demand for skilled labour, and FDI-enhancing types of taxation choices made by governments (Feenstra and Hanson, 1997).

Economic literature on the Asian miracle has highlighted the role of the government, land reforms and universal education to explain the good performance of Asian countries. According to Stiglitz (1996), redistribution policies increased the ability of the median citizen to consume, thus providing an additional boost for growth through domestic consumption and investment.

(c) Environmental impact of economic development

Another important dimension of development beyond income is environmental quality. As with the Human Development Index cited above, we have relied on a composite index to gauge the strength of the relationship between incomes and environmental performance for all available countries. The measure used in this report is the

Environmental Performance Index (EPI) produced by the Yale Centre for Environmental Law and Policy.

The index is based on 22 indicators of environmental health and eco-system viability, including pollution, access to clean drinking water, sulphur dioxide (SO₂) emissions, carbon dioxide (CO₂) emissions, agricultural subsidies and critical habitat protection. Higher values of the index represent better environmental quality. Among the fast-growing developing economies, some have improved their EPI performance while others have seen a deterioration.

Figure B.14 shows a positive relationship between the EPI and per capita income. This suggests that countries with higher incomes are better able to pay for preserving their environment. To the extent that trade and other policies can promote economic growth, they may indirectly help to clean up the environment.

Environmental economics refers to the "Environmental Kuznets Curve" (EKC) to identify a correlation between income per capita and environmental degradation. The hypothesis is that environmental quality degrades at the early stages of development while beyond a certain income level environmental quality improves (Grossman

and Krueger, 1993). Pollution increases as an economy industrializes and moves from agriculture to manufacturing (a pollution-intensive sector). Then, as the country GDP per capita increases, environmental quality improves despite the increase in the economic activity (scale effect). This is for several reasons.

First, as an economy develops, the composition of production changes. Production tends to move away from natural resource-intensive goods to services. Secondly, changes in consumption and a growing preference for environmentally friendly goods emerge at higher levels of income. Thirdly, as a country's level of development increases, the quality of institutions improves, as does a country's capacity to enforce regulatory measures to address environmental problems. Finally, a higher GDP per capita also enhances the possibility to exploit economies of scale associated with pollution abatement technologies (technique effect).

Empirical evidence on the existence of an EKC has to date produced conflicting results. While there is some evidence for a reduction in some pollutants, such as SO₂, the EKC has in general not been found to apply for CO₂ emissions – rather, per capita CO₂ emissions appear to increase with income (Shafik, 1994; Frankel and Rose, 2005; Huang et al., 2008). Among the possible explanations for this conflicting evidence is that, while some pollutants create local problems (SO₂ is one of them), others (such as CO₂ emissions) do not. Therefore, while reducing pollution that is causing a local problem provides a higher pay-off for local government, governments are less likely to intervene when the environmental impact of a pollutant is more global than local.

Empirical evidence indicates that there is no causal relationship between a country's level of development and its environmental performance. Political institutions, good governance and the diffusion of environmentally friendly technological innovation (all factors associated with a

country's level of development) shape the relationship between GDP per capita and environmental quality. As a country's economic size increases, so does its economic activity and – for a given technology – pollution. However, appropriate environmental policies can have an impact on this relationship.

Trade is an important factor affecting the relationship between growth and environment. First, opening up to trade increases the availability, and lowers the costs, of environmentally friendly technologies. Secondly, the greater demand by the public – especially in more advanced economies – for a cleaner environment also provides an incentive to adopt cleaner technologies in less advanced economies. For example, it has been argued that multinational enterprises, due to concerns about their reputation and economies of scale, may require more stringent environmental measures from their subsidiaries than that required by the host country (Albornoz et al., 2009). Thirdly, assuming no changes in the scale of an economic activity and the production method, trade opening may reduce domestic pollution in the country that specializes in the clean sectors. Specialization in a pollution-intensive sector will, however, worsen environmental quality if the country does not improve its environmentally friendly technologies.

5. Trade opening in developing countries

The trade opening of several large, dynamic developing economies over the last decades has radically changed the pattern of international trade. Table B.3 shows data for the most-favoured nation (MFN) applied rate, the “bound” rates (the maximum tariff rates that WTO members have committed not to exceed), and the percentage of product lines with bound rates. The table shows an average rate in 2011 and the percentage change since 1996.

Table B.3: Average tariff rates, by country group (per cent)

	Most-favoured nation (MFN) rate (per cent)		Bound rate (per cent)		Bound lines (per cent)	
	Average 2009–11	Change since 1996	Average 2009–11	Change since 1996	Average 2009–11	Change since 1996
World	8.5	-2.0	27.0	-3.8	80.1	12.9
Developed	2.7	-1.9	6.3	-1.3	98.9	-0.1
G-20 developing	10.1	-5.5	29.2	-9.8	80.0	7.9
Other developing	13.0	-1.7	29.6	-7.1	87.6	22.4
LDCs	7.1	-2.1	42.2	-2.4	45.5	8.4

Source: WTO Secretariat.

Note: Changes are from average 1996-98 to average 2009-11. The sample only includes those country-product pairs for which data are available on the status of bound lines, bound rates and imports for at least one year both at the beginning and at the end of the period.

Table B.4: Tariffs on imports from LDCs in developed and selected G-20 developing economies, 2002–12 (US\$ million and per cent)

	Import values (US\$ million)				Weighted average tariffs, including preferences ^a (per cent)			
	All sectors	Non-oil	Agricultural (AOA) ^b	Non-agricultural (NAMA) ^c	All sectors	Non-oil	Agricultural (AOA) ^b	Non-agricultural (NAMA) ^c
Developed economies								
2002	23,683	16,880	1,664	15,216	2.4	4.0	2.8	4.2
2007	58,377	30,603	3,283	27,320	2.1	3.4	1.9	3.6
2012	83,059	46,492	5,233	41,259	2.1	3.5	0.9	3.8
Selected G-20 developing economies ^d								
2002	4,969	4,221	218	4,003	1.9	5.3	13.3	3.1
2007	31,149	26,728	1,027	25,700	1.0	4.4	17.6	1.7
2012 ^e	63,657	46,777	1,664	45,113	0.4	1.2	5.2	0.8

Source: WTO Secretariat estimates based on IDB data.

^aWeighted averages for developed economies use fixed weights for all three years.

^bAgricultural products as defined in Annex 1 of the WTO Uruguay Round Agreement on Agriculture (AOA).

^ci.e. non-agricultural market access, referring to all products not covered by the WTO Agreement on Agriculture.

^dIncludes Brazil, China, Indonesia, Republic of Korea, Mexico, South Africa and Turkey.

^eTariff data are available for all G-20 developing economies other than Argentina in 2012. For this group of countries, trade-weighted average tariffs on LDC imports are 1.3 per cent for all sectors, 1.3 per cent for non-oil, 3.8 per cent for agriculture and 1.8 per cent for non-agriculture.

All country groups shown in Table B.3 have liberalized trade since 1996 but the trade opening in G-20 developing and other developing economies has been the most significant. G-20 developing countries have reduced their MFN applied rate by over 5 per cent. They have bound over 80 per cent of their tariff lines and reduced their bound rates by approximately 10 per cent over the last decade. While the change in the MFN rate in other developing economies was roughly in line with the change for the world as a whole, these countries also reduced their bound rates sharply (by 7 per cent) and substantially increased the number of bound lines (by 22 per cent).

China's accession to the WTO in 2001 played a major role in its opening to trade. China's simple average tariff has fallen from about 40 per cent in 1985 to under 10 per cent today. Ianchovichina and Martin (2001) create a counterfactual scenario for Chinese tariffs if the country had not joined the WTO. They estimate that China's accession might have lowered its weighted average tariff protection on imports from 21.4 per cent to 7.9 per cent. A large body of research exists showing the positive impact of China's accession in terms of economic growth, trade and investment.⁸

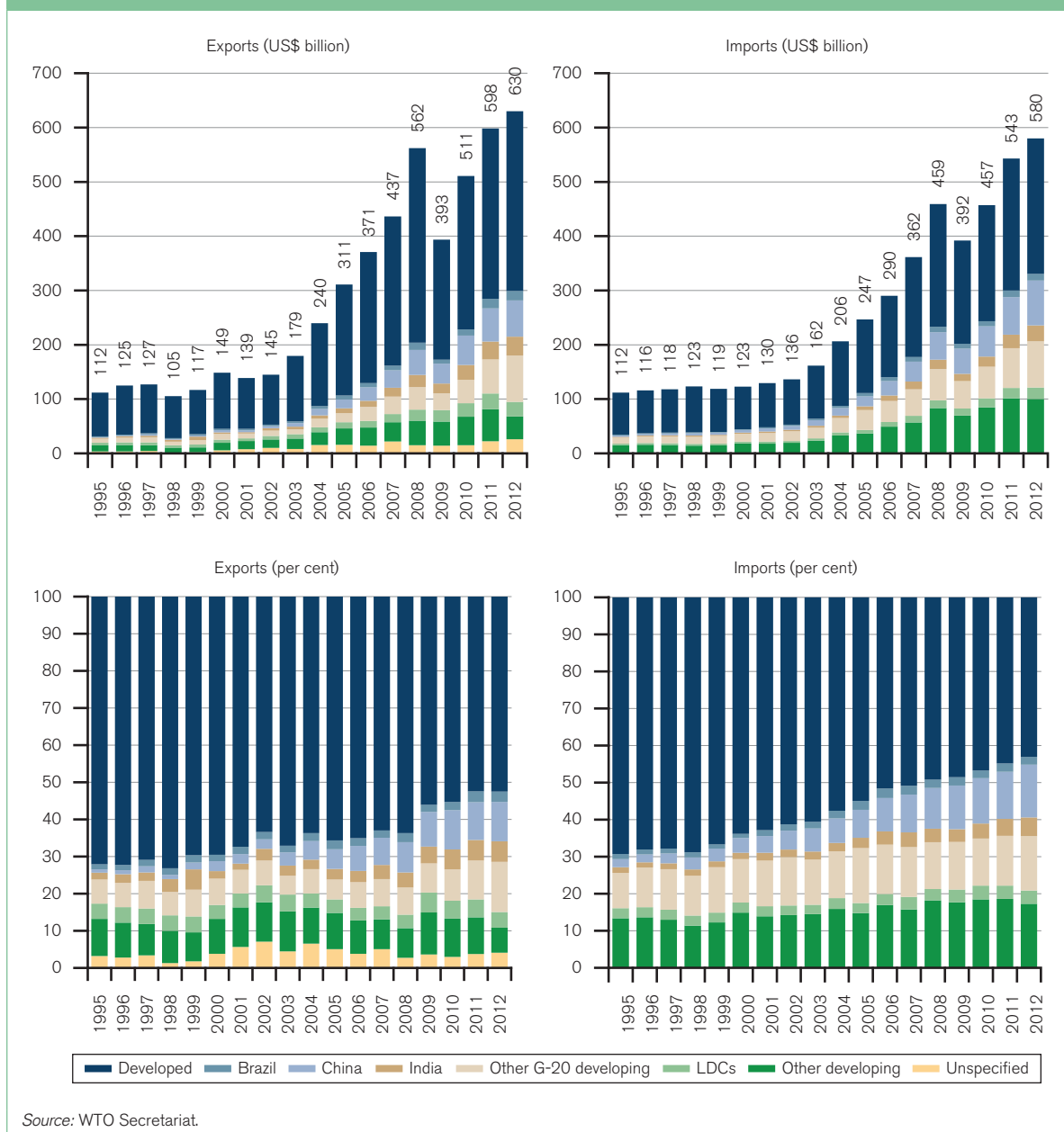
The trade opening of G-20 developing economies has expanded export opportunities for these economies in general and for LDCs in particular. This is illustrated by Table B.4, which shows the evolution of tariffs applied by developed economies and selected G-20 developing

economies on imports from LDCs. The G-20 developing economies in the table are limited to those with data for all periods shown, i.e. 2002–12. Tariffs on LDC imports have fallen more rapidly in G-20 developing countries than in developed countries since 2002. Much of this decline is due to the opening of the Chinese market, which carries a large weight in this group of importers.

In recent years, LDCs and other developing countries have significantly increased their exports to G-20 developing countries, particularly those in Asia. The share of Africa's exports to developed economies fell from 72 per cent in 1995 to 53 per cent in 2012 (see Figure B.15). A similar pattern was observed in South and Central America and in the Middle East, although it was not as marked as in Africa. For most developing countries, the emergence of large new markets has led to an increase in total exports rather than diversion from traditional trading partners towards new ones. Trade expansion to these markets also reduces output volatility for vulnerable economies.

However, not all products and countries benefit to the same extent from these new market opportunities. Exports from African countries to developing economies are concentrated in primary products, especially oil. This trend is particularly evident in Africa's exports to developing Asia (i.e. Asia excluding Australia, Japan and New Zealand). In 2012, fuels accounted for about 69 per cent of all exports from Africa to these countries, compared with a 65 per cent share in exports to

Figure B.15: Merchandise exports of Africa, by export/import partner, 1995–2012 (US\$ billion and per cent)



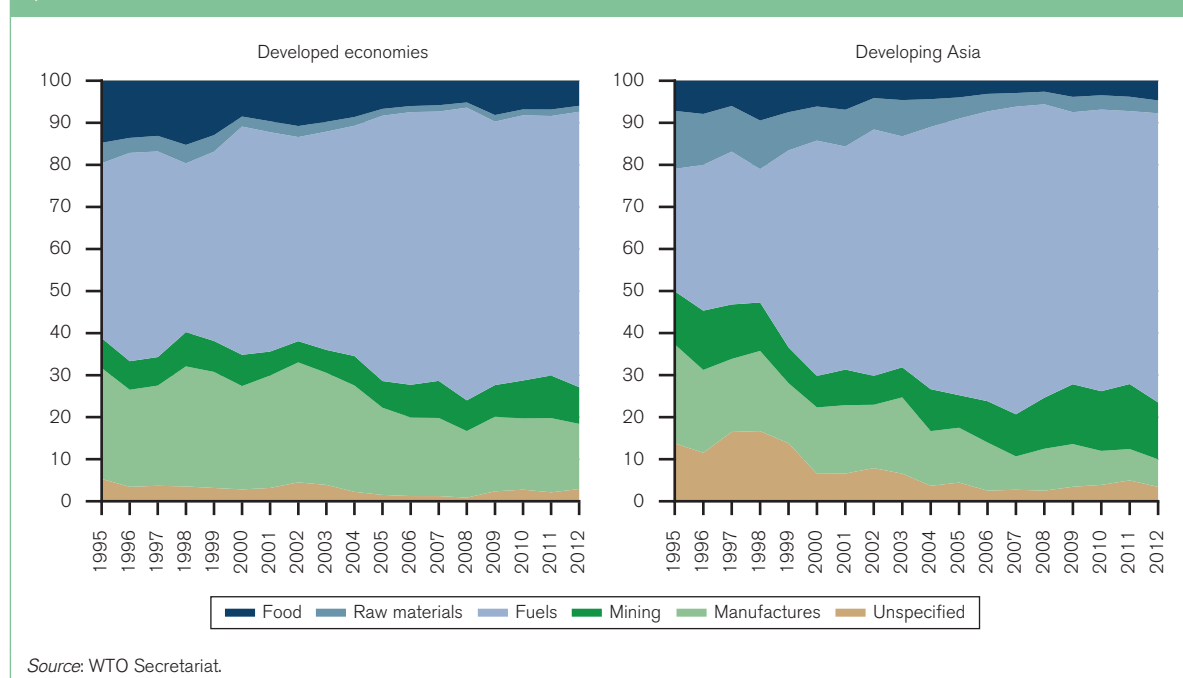
Source: WTO Secretariat.

developed countries. Moreover, the share of primary products (including food, agricultural raw materials and mining products as well as oil) in African exports to developing Asia reached 90 per cent in 2012, compared with 82 per cent for developed economies (see Figure B.16). In addition, developing Asia's trade with Africa is concentrated in a handful of countries. Around 80 per cent of developing Asia's imports from Africa originate from three countries: Angola, Nigeria and South Africa.

6. Conclusions

This section has documented the rapid rise of large developing countries over the past 15 years and their increased importance in international trade. Trade opening across a wide range of sectors has been an integral part of this process. Access to these markets presents an enormous opportunity for other developing countries.

Figure B.16: Merchandise exports of Africa to developed economies and developing Asia by product, 1995–2012 (per cent)



Endnotes

- 1 The developed economies group also includes a number of small territories whose data are usually recorded together with other countries, specifically: Andorra, Bermuda, Channel Islands, Faroe Islands, Gibraltar, Greenland, Isle of Man, Liechtenstein, Monaco, San Marino, and Saint Pierre and Miquelon.
- 2 The Commonwealth of Independent States consists of Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, the Russian Federation, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.
- 3 On 29 April, 2014, the World Bank announced the release of new purchasing power parity (PPP) estimates from the International Comparison Program using data from 199 countries – the most extensive measurement effort of this type to date. These new estimates may alter some specific findings in this report, which was prepared using earlier PPP estimates, but the overall story would not be affected.
- 4 See WTO (2008b), Section B for a review, as well as Box B.1 for a short overview.
- 5 Acemoglu and Ventura (2002) show that long-term growth with capital accumulation only is not sustainable in an open economy (as is typically the case in a closed economy) if countries have market power over the product they export (a high-technology product, for example). This is because, in this case, they will experience a worsening of their terms-of-trade as their exports increase.
- 6 Baldwin and Robert-Nicoud (2008).
- 7 This coefficient (also known as the Gini index because it ranges in value between 0 and 1) measures the degree of concentration in a particular population when the mathematical form of the underlying distribution is unknown. It is especially popular for measuring income inequality and is based on the Lorenz curve, which shows the proportion of total income received by the poorest X per cent of persons in a particular country.
- 8 For instance, Ianchovichina and Martin (2001) provide estimates of the gains due to trade reforms and their impact on wages and employment. Hertel et al. (2006) show that China's accession to the WTO substantially increased investment and capital stocks. These authors explain the rise of domestic investment by commitments about the removal of local content requirements, the end of discrimination between domestic and foreign companies and a more efficient use of domestic savings. Mattoo (2002) looks at the impact of China's accession to the WTO from commitments on services liberalization that he considers to constitute the most radical programme of services reforms negotiated under the WTO. He finds that foreign investment increased as most restrictions on foreign entry and ownership, as well as forms of discrimination against foreign firms, were expected to be eliminated. See also Tang and Wei (2009) for a more general empirical examination of the positive impact of GATT/WTO accessions on growth and investment. Similar results, with a further refined methodology, are also obtained by Eicher and Henn (2011).

Appendix tables

Appendix Table B.1: Country groups used in this report

Developed economies

Australia, Austria, Belgium, Bermuda, Bulgaria, Canada, Cyprus, Czech Republic, Denmark, Estonia, Faroe Islands, Finland, France, Germany, Gibraltar, Greece, Greenland, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Saint Pierre and Miquelon, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom, United States.

Developing economies

G-20 developing economies

Argentina, Brazil, China, India, Indonesia, Republic of Korea, Mexico, Russian Federation, Kingdom of Saudi Arabia, South Africa, Turkey.

Least-developed countries (LDCs)

Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, The Gambia, Guinea, Guinea-Bissau, Haiti, Kiribati, Lao People's Democratic Republic, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Myanmar, Nepal, Niger, Rwanda, Samoa, Sao Tomé and Príncipe, Senegal, Sierra Leone, Solomon Islands, Somalia, South Sudan, Sudan, Tanzania, Timor-Leste, Togo, Tuvalu, Uganda, Vanuatu, Yemen, Zambia.

Other developing economies

Albania, Algeria, American Samoa, Andorra, Anguilla, Antigua and Barbuda, Armenia, Aruba (the Netherlands with respect to), Azerbaijan, Bahamas, Kingdom of Bahrain, Barbados, Belarus, Belize, Plurinational State of Bolivia, Bosnia and Herzegovina, Botswana, British Indian Ocean Territory, British Virgin Islands, Brunei Darussalam, Cabo Verde, Cameroon, Cayman Islands, Chile, Chinese Taipei, Christmas Island, Cocos Islands, Colombia, Congo, Cook Islands, Costa Rica, Côte d'Ivoire, Croatia, Cuba, Curaçao, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Fiji, French Guiana, French Polynesia, FYR Macedonia, Gabon, Georgia, Ghana, Grenada, Guadeloupe, Guam, Guatemala, Guyana, Honduras, Hong Kong (China), Iran, Iraq, Israel, Jamaica, Jordan, Kazakhstan, Kenya, Democratic People's Republic of Korea, State of Kuwait, Kyrgyz Republic, Lebanese Republic, Libya, Macao (China), Malaysia, Maldives, Marshall Islands, Martinique, Mauritius, Federated States of Micronesia, Midway Islands, Moldova, Mongolia, Montenegro, Montserrat, Morocco, Namibia, Nauru, Netherlands Antilles, New Caledonia, Nicaragua, Nigeria, Niue, Norfolk Island, Northern Mariana Islands, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Pitcairn, Puerto Rico, Qatar, Reunion, Saint Helena, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Serbia, Seychelles, Singapore, Sint Maarten, Sri Lanka, Suriname, Swaziland, Syrian Arab Republic, Tajikistan, Thailand, Tokelau, Tonga, Trinidad and Tobago, Tunisia, Turkmenistan, Turks and Caicos Islands, Ukraine, United Arab Emirates, Uruguay, U.S. Virgin Islands, Uzbekistan, Bolivarian Republic of Venezuela, Viet Nam, Wake Island, Wallis and Futuna Islands, Zimbabwe.

Source: WTO Secretariat.

Appendix Table B.2: Development indicators by level of development for selected economies, 2000–12^a

Economy	Real GDP per capita 2011 ^a (2005 US\$)	Growth in real per capita GDP 2000-11 ^a (average annual percentage change)	Environmental Performance Index (0-100)		Non-income Human Development Index (0-100)		Trade/GDP ratio (period average)		Trade-weighted average tariff (per cent)		Gini (0-100)	
			2000 ^a	2010 ^a	2000 ^a	2012 ^a	1998-2000 ^a	2010-2012 ^a	2000 ^a	2011 ^a	2000 ^a	2011 ^a
Developed economies												
Australia	38,499	1.7	56	57	96	98	20	22	10.9	1.8	..	..
Austria	37,283	1.1	68	69	85	91	42	54	2.1	1.1	29	..
Belgium	35,446	1.0	53	63	90	92	..	83	2.1	1.1	33	..
Bulgaria	12,907	5.1	49	56	77	83	50	64	2.1	1.1	26	..
Canada	35,345	0.5	56	58	91	93	41	31	1.3	0.9	33	..
Cyprus	28,183	2.2	56	57	82	87	50	44	2.1	1.1	..	..
Czech Republic	23,254	2.4	61	65	86	91	56	71	2.1	1.1	..	..
Denmark	35,641	0.9	61	64	88	92	39	50	2.1	1.1	25	..
Estonia	20,102	5.2	56	56	84	89	79	92	2.1	1.1	37	..
Finland	33,747	1.4	62	64	85	91	35	41	2.1	1.1	27	..
France	31,438	0.8	62	69	86	92	26	30	2.1	1.1	..	..
Germany	34,520	1.4	67	67	88	95	30	48	2.1	1.1	28	..
Greece	23,699	1.4	56	60	82	90	22	26	2.1	1.1	34	..
Hungary	18,852	2.9	52	57	83	87	68	87	2.1	1.1	27	..
Iceland	31,922	-0.5	64	66	89	94	36	54	3.4	1.0	..	..
Ireland	36,705	1.1	54	59	90	96	89	94	2.1	1.1	34	..
Italy	29,089	-0.2	63	69	84	91	24	29	2.1	1.1	36	..
Japan	30,427	0.3	60	63	90	94	10	16	2.8	1.3	..	..
Latvia	16,006	4.9	64	70	78	86	47	59	2.1	1.1	34	35
Lithuania	17,200	4.7	62	66	80	85	47	77	2.1	1.1	32	38
Luxembourg	78,131	2.1	69	69	83	86	75	132	2.1	1.1	31	..
Malta	23,993	1.4	48	49	81	88	87	98	2.1	1.1	..	..
Netherlands	38,055	1.1	64	66	91	95	60	77	2.1	1.1	31	..
New Zealand	26,667	0.9	59	66	94	98	31	29	2.5	1.6	36	..
Norway	52,415	2.7	68	70	94	98	37	34	1.1	0.5	26	..
Poland	18,430	3.9	62	63	82	85	28	45	2.1	1.1	33	33
Portugal	22,290	1.1	52	58	78	84	33	38	2.1	1.1	38	..
Romania	13,574	6.5	42	48	76	84	31	41	2.1	1.1	30	27
Slovak Republic	21,467	4.7	60	67	82	87	47	87	2.1	1.1	..	26
Slovenia	24,365	1.8	57	62	87	94	52	70	2.1	1.1	28	..
Spain	28,741	1.6	56	60	86	92	28	30	2.1	1.1	35	..
Sweden	36,101	1.2	66	69	94	94	39	45	2.1	1.1	25	..
Switzerland	44,824	1.7	76	77	89	93	42	58	1.4	0.0	34	..
United Kingdom	32,260	0.6	61	69	84	89	27	32	2.1	1.1	36	..
United States	42,646	0.5	54	57	92	96	12	15	1.8	1.6	41	..
G-20 developing economies												
Argentina	14,508	3.2	52	56	80	85	11	20	10.5	5.6	51	44
Brazil	9,295	1.9	55	61	68	76	9	12	12.7	7.9	60	55
China	8,069	7.5	41	42	65	73	20	27	14.6	4.1	39	42
India	3,602	6.2	35	36	49	58	13	25	28.6	8.2	..	34
Indonesia	4,339	2.8	47	52	58	67	42	24	5.2	2.6	29	38
Korea, Republic of	27,522	3.1	52	57	88	95	38	55	5.9	8.7	32	..
Mexico	12,710	1.4	43	49	73	81	32	32	15.2	2.2	52	47
Russian Federation	18,678	6.4	49	45	74	82	33	26	8.8	5.2	37	40
Saudi Arabia, Kingdom of	25,556	5.1	51	50	69	77	29	41	12.1	3.9	..	..
South Africa	8,457	3.3	34	35	61	61	25	29	4.6	4.5	58	63
Turkey	14,437	3.1	40	45	63	72	20	27	5.4	2.7	..	40

II. TRADE AND DEVELOPMENT: RECENT TRENDS AND THE ROLE OF THE WTO

 Appendix Table B.2: Development indicators by level of development for selected economies, 2000–12^a (continued)

Economy	Real GDP per capita 2011 ^a (2005 US\$)	Growth in real per capita GDP 2000-11 ^a (average annual percentage change)	Environmental Performance Index (0-100)		Non-income Human Development Index (0-100)		Trade/GDP ratio (period average)		Trade-weighted average tariff (per cent)		Gini (0-100)	
			2000 ^a	2010 ^a	2000 ^a	2012 ^a	2000 ^a	2010-2012 ^a	2000 ^a	2011 ^a	2000 ^a	2011 ^a
			Other developing economies									
Albania	7,365	4.6	59	66	77	81	25	42	11.3	1.3	29	35
Antigua and Barbuda	12,909	-0.3	..	..	..	78	72	51	15.5	14.6	..	..
Armenia	5,235	6.3	45	47	77	81	36	35	2.4	2.3	36	31
Azerbaijan	9,317	11.9	34	43	..	78	37	39	6.6	3.9	..	34
Bahamas	19,367	-2.3	..	..	..	78	41	48	28.6	18.9	..	..
Bahrain, Kingdom of	20,676	2.4	..	..	77	81	71	62	7.9	5.7	..	..
Barbados	20,642	-0.9	..	..	80	86	54	56	21.0	14.8	..	..
Belarus	15,353	6.9	49	54	..	83	..	72	8.9	1.8	30	26
Belize	7,367	1.6	..	..	72	77	57	61	11.2	11.1	53	..
Bolivia, Plurinational State of	4,167	3.6	54	55	68	74	21	37	8.5	3.7	63	56
Bosnia and Herzegovina	7,581	3.9	38	37	..	79	59	49	5.1	1.5	..	..
Botswana	11,811	3.4	48	54	55	60	46	46	1.5	3.6	..	..
Brunei Darussalam	67,544	4.5	62	62	79	83	55	45	9.5	4.1	..	..
Cameroon	1,858	-0.1	42	43	43	52	24	26	13.5	11.9	..	..
Cabo Verde	4,126	5.2	..	..	58	62	41	53	..	10.2	..	..
Chile	15,243	4.3	53	55	80	86	28	35	9.0	4.0	55	52
Colombia	8,408	3.0	58	62	68	75	16	18	11.0	5.6	59	56
Congo	2,427	2.6	47	47	50	55	66	79	17.8	14.7	..	..
Costa Rica	10,123	1.6	66	69	74	82	48	40	3.7	3.1	47	51
Côte d'Ivoire	1,372	-1.8	51	54	38	44	37	47	7.2	6.8	44	42
Croatia	17,216	3.3	61	64	78	84	40	42	4.5	1.3	31	34
Dominica	11,329	2.3	..	..	77	77	57	44	13.8	8.6	..	..
Dominican Republic	8,727	3.4	51	52	67	73	40	29	15.9	6.1	52	47
Ecuador	6,828	4.6	58	61	71	77	25	32	11.1	4.1	57	49
Egypt	4,836	1.9	48	55	62	70	20	23	14.2	8.1	33	31
El Salvador	1,117	1.1	51	52	64	72	33	36	6.5	5.5	52	48
Fiji	4,645	-0.8	..	..	74	79	56	58	..	9.9	..	43
FYR Macedonia	8,240	3.5	45	47	..	78	49	61	9.3	2.0	34	44
Gabon	12,403	4.8	50	58	60	67	49	41	16.2	14.5	..	..
Georgia	5,839	7.2	54	57	..	85	30	45	10.1	0.7	41	42
Ghana	2,522	3.8	45	48	53	65	46	41	16.2	8.6	41	..
Grenada	8,502	1.4	..	..	..	83	58	36	16.2	7.6	..	..
Guatemala	4,236	1.1	48	52	51	60	23	31	5.8	2.3	54	..
Honduras	2,920	1.2	49	53	60	70	53	57	8.4	6.5	55	57
Hong Kong, China	38,569	2.5	..	..	80	91	129	209	0.0	0.0	..	..
Iran	11,818	5.9	41	43	66	77	19	26	22.7	21.8	44	..
Iraq	4,197	0.3	26	25	59	62	64	37	..	..	..	..
Israel	25,081	-0.9	54	55	91	94	35	35	..	3.5	..	..
Jamaica	5,078	0.3	52	54	72	79	43	41	9.9	7.5	44	..
Jordan	5,092	4.4	40	42	72	77	53	58	18.9	5.2	36	35
Kazakhstan	16,270	10	35	33	71	79	42	39	..	3.4	..	29
Kenya	1,298	-0.3	47	49	49	59	38	37	15.0	6.1	43	..
Kuwait, State of	63,199	7.0	37	36	73	73	42	47	3.9	4.1	..	..
Kyrgyz Republic	2,217	0.6	46	46	71	74	47	70	6.8	2.4	36	33
Lebanese Republic	13,159	8.0	47	47	..	76	37	74	16.9	4.8	..	..
Macao, China	69,472	10.1	..	..	..	..	70	79	..	0.0	..	..

Appendix Table B.2: Development indicators by level of development for selected economies, 2000–12^a (continued)

Economy	Real GDP per capita 2011 ^a (2005 US\$)	Growth in real per capita GDP 2000-11 ^a (average annual percentage change)	Environmental Performance Index (0-100)		Non-income Human Development Index (0-100)		Trade/GDP ratio (period average)		Trade-weighted average tariff (per cent)		Gini (0-100)	
			2000 ^a	2010 ^a	2000 ^a	2012 ^a	2000 ^a	2010-2012 ^a	2000 ^a	2011 ^a	2000 ^a	2011 ^a
Malaysia	13,469	2.8	60	63	73	79	108	83	4.3	4.0	49	46
Maldives	10,344	4.7	..	..	61	72	75	99	20.6	20.6	63	..
Mauritius	9,645	-0.8	..	..	68	75	61	60	23.8	0.7	..	..
Moldova	3,393	6.3	42	45	71	75	61	62	2.2	2.5	39	33
Mongolia	5,219	8.7	42	45	63	75	57	65	..	5.1	30	37
Montenegro	11,017	2.9	..	..	..	85	..	51	..	3.5	..	29
Morocco	3,647	1.0	43	46	52	61	28	41	25.4	7.1	39	..
Namibia	5,146	2.9	50	51	56	61	46	45	0.5	1.1	..	..
Nigeria	2,339	15.7	37	40	..	48	36	34	20.0	10.6	..	49
Oman	31,055	8.1	44	44	..	69	45	54	13.7	3.2	..	..
Pakistan	2,473	1.7	35	40	41	53	16	18	17.9	9.5	33	30
Panama	12,155	4.0	56	58	77	81	70	77	7.2	7.6	58	52
Paraguay	4,351	2.9	49	52	66	73	41	49	10.5	4.5	57	52
Peru	8,924	6.3	47	50	73	78	16	25	12.8	1.5	51	48
Philippines	3,521	0.5	50	57	68	72	50	30	4.1	4.8	46	43
Qatar	124,720	9.4	46	47	73	76	75	45	4.3	3.8	..	..
Saint Kitts and Nevis	12,706	0.7	..	..	..	76	54	34	13.1	10.8	..	..
Saint Lucia	9,198	2.0	..	..	..	77	58	57	16.3	9.0	..	..
Saint Vincent and the Grenadines	8,092	1.3	..	..	..	77	57	42	15.0	8.4	..	..
Serbia	9,575	3.6	46	46	79	82	28	46	5.8	..	..	30
Singapore	51,644	3.8	53	56	80	88	164	201	0.0	0.0	42	..
Sri Lanka	4,701	3.6	50	56	75	79	41	29	6.7	5.7	..	36
Suriname	6,700	2.9	..	..	..	71	50	52	12.9	11.9	53	..
Swaziland	4,239	-0.6	..	..	47	52	78	63	0.7	4.2	..	51
Syrian Arab Republic	3,919	10.2	41	43	63	69	31	24	15.5	6.1	..	..
Chinese Taipei	28,414	1.2	56	62	..	..	48	71	..	..	..	..
Tajikistan	2,437	5.3	36	39	67	73	76	46	6.8	5.9	29	31
Thailand	8,491	2.9	54	60	64	72	55	72	9.5	4.9	43	39
Trinidad and Tobago	20,196	5.6	43	47	70	74	50	64	17.9	10.0	..	..
Tunisia	6,632	0.5	44	47	66	75	40	52	25.7	16.0	41	36
Turkmenistan	12,531	5.2	30	32	..	73	100	56	0.0	..	41	..
Ukraine	8,176	6.8	47	46	76	81	51	54	3.9	1.9	29	26
Uruguay	12,625	2.5	56	57	78	83	17	27	6.2	3.8	44	45
Uzbekistan	6,209	5.6	29	32	..	74	21	27	5.8	6.9	45	..
Venezuela, Bolivarian Rep. of	10,343	4.7	53	56	66	77	22	21	13.4	8.6	48	..
Viet Nam	3,448	6.1	48	51	61	69	50	83	19.0	5.7	36	36
Zimbabwe	4,348	-0.1	49	53	45	54	40	57	17.7	..	..	..
Least-developed countries (LDC)												
Angola	4,214	8.1	43	48	35	48	74	52	8.5	7.4	59	43
Bangladesh	1,554	2.6	38	43	49	57	16	27	17.9	13.0	33	32
Benin	1,232	0.4	50	50	38	46	27	29	12.6	15.0	..	..
Bhutan	4,607	3.8	..	..	..	52	38	53	14.8	17.8	..	..
Burkina Faso	1,052	3.4	..	..	..	33	18	28	11.2	8.6	47	40
Burundi	490	0.8	..	..	29	42	12	18	13.3	6.6	42	..
Cambodia	2,348	7.6	53	55	51	60	47	52	16.4	9.9	..	36
Central African Republic	617	-0.7	..	..	29	39	21	17	18.3	13.6	..	56

II. TRADE AND DEVELOPMENT: RECENT TRENDS AND THE ROLE OF THE WTO

 Appendix Table B.2: Development indicators by level of development for selected economies, 2000–12^a (continued)

Economy	Real GDP per capita 2011 ^a (2005 US\$)	Growth in real per capita GDP 2000-11 ^a (average annual percentage change)	Environmental Performance Index (0-100)		Non-income Human Development Index (0-100)		Trade/GDP ratio (period average)		Trade-weighted average tariff (per cent)		Gini (0-100)	
			2000 ^a	2010 ^a	2000 ^a	2012 ^a	2000 ^a	2010-2012 ^a	2000 ^a	2011 ^a	2000 ^a	2011 ^a
Chad	1,851	7.8	..	..	29	32	24	44	13.2	14.9	..	..
Comoros	921	-0.6	..	..	..	48	26	33	..	6.2	..	..
Congo, Democratic Republic of	291	2.6	46	47	32	40	20	69	12.7	11.0	..	..
Djibouti	2,392	2.3	..	..	..	44	34	34	26.7	17.6	..	..
Equatorial Guinea	9,176	9.5	..	..	45	46	101	74	14.4	15.6	..	..
Ethiopia	783	5.3	52	53	29	43	16	25	12.1	10.4	30	34
Gambia	1,236	0.5	..	..	34	45	27	36	..	12.5	50	..
Guinea	958	-2.4	..	..	..	37	23	38	..	11.9	..	..
Guinea-Bissau	907	1.5	..	..	..	37	30	28	13.9	11.8	..	..
Lao People's Democratic Republic	2,624	4.7	..	..	50	58	35	31	13.4	13.2	35	37
Lesotho	1,488	3.4	..	..	45	48	73	78	17.5	10.7	..	..
Liberia	474	-0.8	..	..	40	50	104	86	..	..	..	..
Madagascar	759	-0.8	..	..	49	60	28	31	3.4	6.1	42	44
Malawi	802	2.8	..	..	40	49	34	42	9.9	6.2	50	44
Mali	941	1.7	..	..	26	36	31	31	10.6	8.4	..	33
Mauritania	2,616	5.8	..	..	42	47	33	71	9.9	10.1	39	40
Mozambique	818	6.0	47	48	26	33	22	42	10.1	4.8	..	46
Nepal	1,185	1.2	51	58	45	53	26	22	16.4	12.0	..	33
Niger	523	0.1	..	..	22	31	21	38	13.7	9.7	..	35
Rwanda	1,201	5.2	..	..	33	48	12	22	6.3	6.1	52	51
Sao Tomé and Príncipe	1,852	4.2	..	..	51	58	33	34	..	..	..	..
Senegal	1,412	-0.8	46	47	41	50	31	33	9.4	8.4	..	40
Sierra Leone	867	1.7	..	..	26	38	16	37	..	9.9	..	35
Sudan	2,374	4.8	44	46	36	41	13	15	19.7	14.7	..	35
Tanzania	1,269	4.8	52	54	40	53	17	37	13.1	6.6	35	..
Togo	947	1.4	47	49	49	54	37	48	10.9	11.1	..	39
Uganda	1,187	3.0	..	..	42	51	18	31	6.0	7.3	43	44
Yemen	2,048	7.0	33	35	35	47	36	31	11.8	3.8	33	..
Zambia	2,052	7.0	54	56	40	48	33	42	9.4	2.7	53	57

Sources: Penn World Tables 8.0 for real GDP, Yale Center for Environmental Law and Policy for EPI, World Bank World Development Indicators for Gini, UNDP for HDI, WTO Secretariat for trade/GDP.

Notes: Real GDP per capita is measured as the ratio of expenditure-based GDP at chained purchasing power parity (PPP) and population, both taken from the Penn World Tables v. 8.0. The Environmental Performance Index (EPI) ranks countries' performance on a variety of indicators covering both environmental public health and ecosystem vitality. The Human Development Index (HDI) is a synthetic measure of several quality-of-life indicators, including life expectancy, health, and educational attainment, but excluding income. Trade openness is measured as (exports + imports)/(2*GDP). These data are then averaged over three years to smooth out volatility. The trade-weighted average tariff is the average of effectively applied rates weighted by the product import shares corresponding to each partner country. Specific rates have been converted to ad valorem equivalents. Import weights are taken from the UN Comtrade database. The Gini coefficient measures the extent to which the distribution of incomes in a given country deviates from a hypothetical distribution where all incomes are equal.

^aOr nearest year.

C. The rise of global value chains

Fragmentation of global production is not a new phenomenon, but its importance has been growing over time. This trend has resulted from technological innovations in communication and transportation, which have lowered coordination costs, allowing countries to specialize in production of specific tasks or components, rather than entire final products.

This section looks at how the nature, scale and scope of global value chains (GVCs) have changed dramatically during the last two decades.

It examines how GVCs can offer developing countries opportunities to integrate into the world economy at lower costs but highlights that gains from GVC integration are not automatic. It considers the risks posed by GVC participation and how various policies are correlated with countries' participation in GVCs.

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Some key facts and findings

- Global value chains (GVCs) can provide an opportunity for countries to integrate into the global economy at lower costs by producing only certain components or tasks rather than complete final products.
- More than half of developing country exports in value-added terms involve GVCs. The share of trade in parts and components between developing countries has quadrupled over the last 25 years. Services play a central role and constitute more than one-quarter of exports from developing countries. Developing economies are becoming important sources and recipients of foreign direct investment (FDI).
- Initial integration into GVCs typically leads to a productivity-enhancing movement of labour from agriculture to manufacturing and services. When a country gets sufficiently close to having the capacity to produce at world-standard quality and efficiency levels, technology and knowledge transfers – often facilitated through FDI – can catapult it over these thresholds. At later stages of development, upgrading to higher value-added tasks in GVCs can help to drive development.
- Participation in GVCs may however involve risks. For example, while it may make industrialization easier to achieve, competitive advantage can become more fleeting, increasing vulnerabilities to relocation of firms.
- Countries with a favourable business environment and low tariffs participate to a greater extent in GVCs. Aid for Trade facilitation can help address some obstacles, such as lack of infrastructure and customs barriers. Trade in intermediate goods is associated with the integration of trade partners beyond tariffs: more than 40 per cent of trade agreements in force today include provisions related to competition policy, investment, standards and intellectual property rights.

GVCs are often thought of as a relationship between the North (developed countries) and the South (developing countries), but data show that developing countries are increasingly engaging in international production, boosting South-South trade. The deepening of services links and their complementarity with manufacturing play a key role, enabling the efficient combination of the various fragments of the production processes (see Section C.1).

GVCs can offer developing countries opportunities to integrate into the world economy at lower costs – but gains from GVC integration are not automatic. Initial integration into GVCs typically leads to favourable structural transformation as labour is moved to higher productivity activities. But not all countries manage to join GVCs; only those sufficiently close to being able to produce at world standard quality and efficiency levels are able to participate. In these cases, knowledge and technology transfers, which are often facilitated through foreign direct investment (FDI) and openness to new imports, can trigger initial integration. However, developing countries initially join GVCs in low-skill tasks that can be easily shifted to competing countries, and thus their value capture can remain limited. Upgrading within GVCs can then constitute a way to underpin development thereafter. Yet, upgrading to more sophisticated tasks with high value capture, such as R&D, design, or branding, can be hard to achieve (see Section C.2).

GVC participation also holds various risks. It typically heightens vulnerability to global business cycles and supply disruptions. Also, it may adversely affect income inequality within countries and the risks increase when firms quickly relocate, which can cause social displacement. Further risks relate to labour and the environment and a narrow field of learning, which is the outcome when the capabilities that are acquired cannot be easily transferred to other, higher value-added activities (see Section C.3).

The literature and the data suggest that various policies are correlated with countries' participation in GVCs. These include country-specific domestic policies to improve the business environment, tariff reductions, especially on intermediate goods trade, and deep integration aimed at regulatory convergence (see Section C.4).

1. Unbundling production: new patterns

Historical evidence confirms that globalization is not a new phenomenon, as has been discussed in Section A. International fragmentation of production has become increasingly pronounced since the mid-1980s (Baldwin and Martin, 1999; Baldwin, 2006; Baldwin, 2011b). However, interest in GVCs has significantly increased over the last ten years (see Table C.1). This section highlights the new patterns in GVCs in order to understand why economists and policy makers increasingly focus their attention on this phenomenon.¹

Table C.1: Results from a Google Scholar search of "global value chains", 1980–2013

	Number of results
1980–89	6
1990–93	3
1994–97	17
1998–2001	156
2002–05	1,310
2006–09	4,200
2010–13	7,210

Source: <http://scholar.google.ch/>

Note: Number of entries of scholarly literature as a result of a Google Scholar search of the exact phrase "global value chains". Similar outcomes are achieved by searching for other terms capturing the phenomenon of internationalization of production. Search conducted on 10 December 2013.

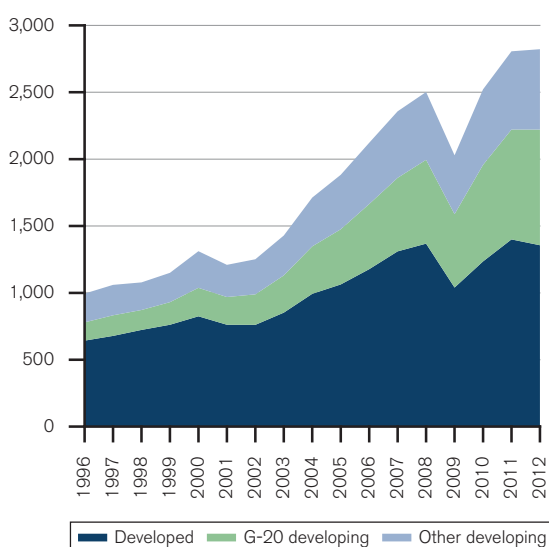
The prominence of production through GVCs requires particular statistics to measure international trade. Throughout this section, two complementary measures will be used to illustrate the new patterns of trade that originate from the diffusion of GVCs. The simplest way to capture the importance of GVCs is based on traditional trade statistics. The share of imports of parts and components gives an approximate idea of the involvement of countries in international production networks. Nonetheless, this measure bears an important limitation. As will be explained in detail later, traditional gross measures of trade are flawed by double counting the value of intermediate goods in international transactions.

In order to deal with the problem of double counting, a more sophisticated way to calculate how much countries and industries are integrated into GVCs is to compute a participation index based on novel measures of trade in value-added terms. The concept and construction of the GVC participation index is described in more detail in Box C.1. The objective of this participation index is to capture backward and forward engagement in GVCs. A limitation of this index is the assumption that the production network is composed of at least three different stages or steps performed sequentially in different countries. The participation index does not capture the involvement in GVCs of countries that, for example, import intermediate goods that are assembled into final goods consumed domestically.² This section reports descriptive statistics and results using both measures in order to give a more complete picture of GVCs.

(a) The increasing role of developing countries in GVCs

International trade has been characterized by the growing interconnectedness of production processes across countries, with each country specializing

Figure C.1: Imports of parts and components by country group, 1996–2012 (US\$ billion)



Source: UN Comtrade database, WTO Secretariat.

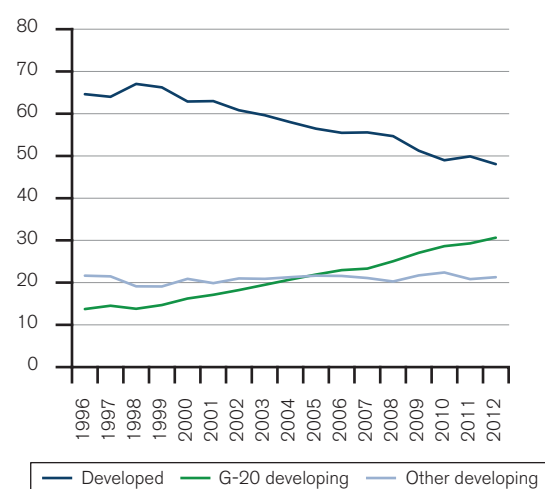
Note: "Parts and components" are defined as the Standard International Trade Classification (SITC) equivalent of Broad Economic Category (BEC) parts and components plus unfinished textiles in SITC section division 65. The category "other developing" also includes least-developed countries (LDCs), which represent a very small share.

in particular stages of production. Communication and coordination technology together with low transportation costs have permitted the unbundling of production. World imports of parts and components have steadily increased over the past decades (see Figure C.1). Today, more than one quarter of world imports in manufactured goods are represented by intermediate imports (parts and components). The only exception is the sharp decline of trade in parts and components in 2009 following the financial crisis (for more discussion on this, see Section E).

The increase in trade in parts and components has been very similar to the growth of total imports. Therefore, the share of imports of parts and components within total imports remained relatively constant between 25 and 29 per cent from 1996 to 2012. The value of imports of parts and components by LDCs as a share of their total imports is lower and remained relatively constant at around 18 per cent until 2007. In 2008, this share declined to 10 per cent and it remained low until 2012.

Figure C.2 illustrates how the contribution to trade in parts and components of different groups of countries has changed over time. Developed economies contributed to almost two-thirds of the world imports of intermediate inputs in 1996 but less than a half in 2012. The decrease in advanced economies' share of trade in parts and components is mainly due to the increase of imports of G-20 developing economies. China is the main driver of

Figure C.2: Share in imports of parts and components by country group, 1996–2012 (per cent)



Source: UN Comtrade, WTO Secretariat.

the increase in the share of trade in parts and components of G-20 developing countries. Its share increased almost fivefold, from around 3 per cent in 1996 to more than 15 per cent in 2012. The share of parts and components imports of LDCs within world imports of intermediate inputs is negligible.

Developing economies are also increasingly recipients and sources of FDI. They absorbed more than half of global FDI inflows in 2012, versus less than 20 per cent in 2000. FDI outflows from developing countries and in particular from emerging economies also increased significantly during the 2000s. The share of FDI outflows from developing countries grew from 7 per cent at the end of the 1980s to 34 per cent in 2012 (see Figure C.3).

As already mentioned, gross values of trade in parts and components give an indication of GVCs trade but, in a world where production processes are interconnected across countries, standard gross trade flows record the value of intermediate goods along the production network multiple times. Imagine, for example, that country A exports intermediate goods to country B for a value of 100 units; country B further processes the intermediate goods and exports a final good worth 110 units to country C. Total gross trade between these countries is equal to 210 units of value. However, the value that has been added is only 110 units. In fact, country A generated 100 units of value added while country B generated only 10 units, which is the difference between the value of final goods (110) and the value of inputs (100) used in the production. Conventional measures would also show that C has a trade deficit of 110 with B, and no trade at all with A. If instead we look at value-added content, C's trade deficit with B reduces to 10 and it runs a deficit of 100 with A.

Figure C.3: Share of outflows and inflows of FDI, 1988–2012
(percentage of total world)



Source: Calculations based on UNCTADstat.

The previous simple example illustrates why it is desirable to develop more accurate ways to collect trade statistics (see Maurer and Degain, 2010). Box C.1 explains how participation in GVCs can be measured using a new dataset of trade in value added (TiVA) produced by the OECD and the WTO.³ An unfortunate drawback is that data requirements to devise TiVA statistics are significant, and so are not currently available for many smaller developing countries, including LDCs and small, vulnerable economies (SVEs).

When measured in value-added terms, world participation in global value chains is higher than when it is measured with trade in parts and components and represents almost 49 per cent of total gross exports. Table C.2 shows that the participation of developing countries in GVCs is slightly higher: 51 per cent of gross exports of developing countries in 2009 relates to their participation in international production networks. Furthermore, the prominence of GVCs has slightly increased since the mid-1990s.

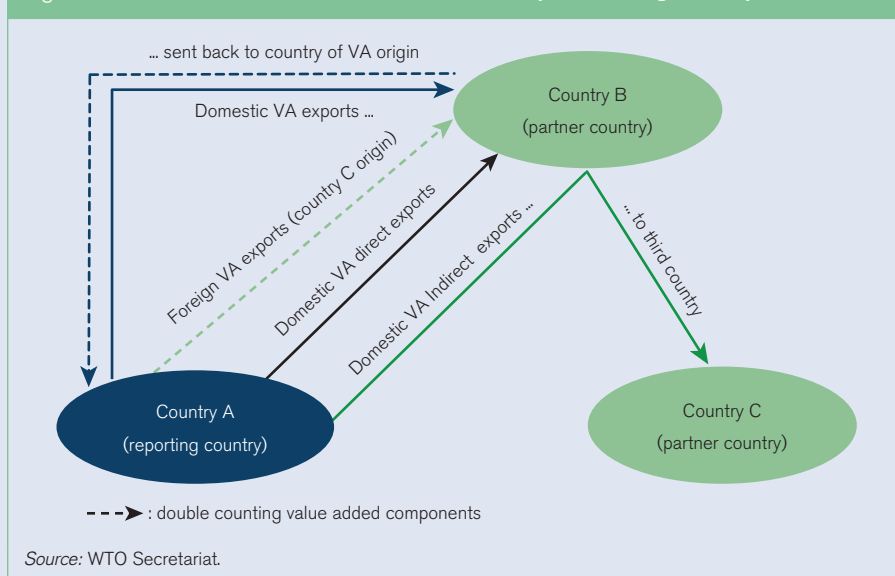
Box C.1: How to measure GVC participation

The recent research activity on trade in value-added terms mainly derives from the notion of vertical specialization developed by Hummels et al. (2001) and defined as “the value of imported intermediates embodied in a country’s exports”, or import content of exports.⁴ This measure captures participation in GVCs only partially. It ignores the steps of production that do not utilize foreign inputs.

Koopman et al. (2010) propose a GVC participation index that captures the import content of exports (backward participation) and how much domestic value added is embodied as intermediate inputs in third countries’ gross exports (forward participation). The participation index is defined as the sum of the foreign value added (FVA) embodied in a country’s exports and the indirect value-added (IVA) exports (i.e. value of inputs produced domestically that are used in other countries’ exports) expressed as a percentage of gross exports.⁵ This index captures both backward and forward participation. This report calculates this participation index using the TiVA database.⁶

Figure C.4 illustrates different value-added components of gross exports. The solid straight black arrow between Countries A and B in the figure reflects the value created domestically in Country A that is actually consumed directly in Country B. The angled green arrow beginning at Country A and ending at Country C represents the value created in Country A and embedded in the exports of goods from A to B, which are further processed and exported to Country C. It represents the domestic value added that is indirectly exported to Country C. The solid angled blue arrow represents the domestic value added of Country A that is re-imported through goods from Country B. Finally, the dashed green arrow beginning at Country A and ending at Country B represents FVA embodied in a country’s exports. It measures the value of exports from Country A to Country B that has been originated in a third country. Thus, it reflects the import content of exports.

Figure C.4: A visualization of the value-added components of gross exports



The following example can help in the understanding of these concepts. Imagine Country A being an exporter of tyres to Country B. If Country A imports rubber from a third country, the value of rubber embedded in the exports of tyres from A to B is included in the FVA component of gross exports from A to B. If those tyres are used in the production of cars in Country B that are further exported to Country C, then the value added in the production of tyres in Country A follows the angled green arrow beginning at Country A and ending at Country C. The sum of these two flows is the numerator of the participation index. If, instead, the vehicle produced in Country B using tyres imported from A is consumed domestically (in Country B), the value of tyres is the domestic value added of direct exports (the solid blue straight arrow between Countries A and B). Finally, if the car produced in Country B is exported to Country A, the value added in the production of tyres in Country A is part of re-imports.

Figure C.5 presents the participation index in GVCs across economies in 1995 and 2008.⁷ In 2008, the top three positions with respect to supply chain participation were held by developing economies: Chinese Taipei, Singapore and the Philippines – whereas in 1995 the top

three were Singapore, Malaysia and Hong Kong, China. The ranking of big countries such as the United States, China, and India suggests that the participation index depicts only a partial view of GVCs. The value attributed to large economies may be relatively low because their

Table C.2: GVC participation index, 1995–2009

GVC participation index:	1995	2000	2005	2008	2009
All	39.8	46.2	51.0	51.9	48.5
Developed	39.6	46.3	49.9	50.7	47.2
Developing	40.5	45.9	53.5	54.4	50.9

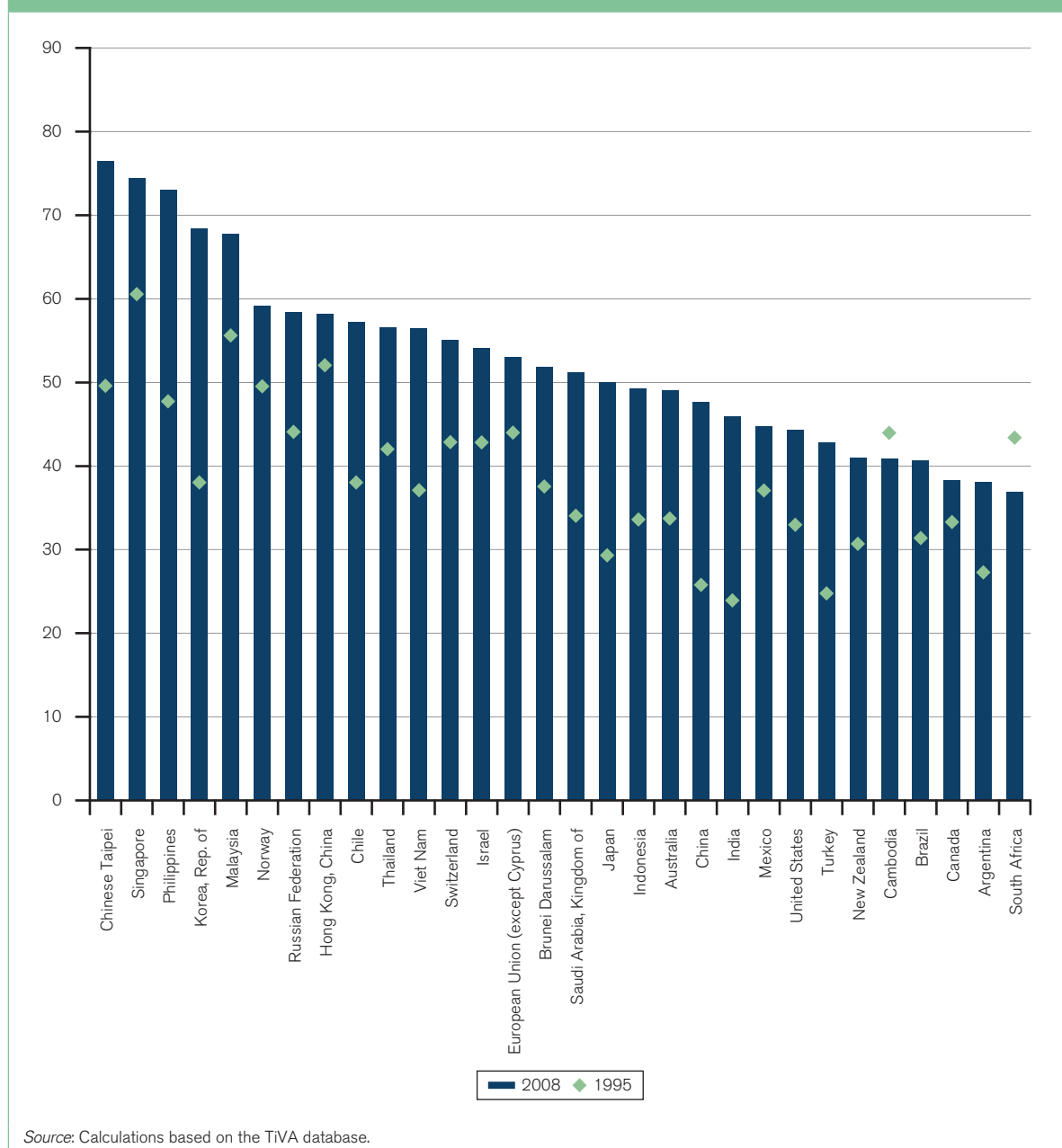
Source: TiVA database.

Note: Developed economies included in the TiVA dataset are: Australia, Canada, EU members except Cyprus, Japan, Norway, New Zealand, and the United States. Developing economies are: Argentina; Brazil; Brunei Darussalam; Chile; China; Hong Kong, China; India; Indonesia; Israel; Republic of Korea; Malaysia; Mexico; the Philippines; the Kingdom of Saudi Arabia; Singapore; South Africa; Chinese Taipei; Thailand; Turkey; and Viet Nam. Cambodia and Russia are also included in the calculation of the participation index.

size enables them to produce domestically a wider set of intermediate goods, resulting in lower imports of intermediates. Moreover, domestic production may be directed towards final goods, which implies that their forward participation is lower.

Looking at the changes across time, all economies apart from South Africa and Cambodia increased their participation in GVCs. The Republic of Korea, Chinese Taipei, the Philippines, India and China increased their participation the most. The increasing importance of China in GVCs can also be seen through an alternative analysis of the network structure of GVCs presented in Box C.2.

Figure C.5: Participation index in GVCs, 1995 and 2008
(percentage of participation)



Source: Calculations based on the TiVA database.

Box C.2: Mapping and measuring global trade in value-added networks

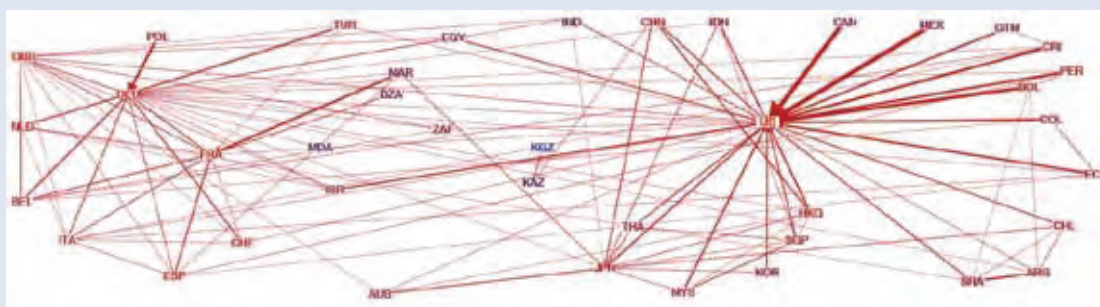
Mapping trade in intermediate goods is a first step in analysing the network of inter-industry trade in intermediate goods that most typically characterizes today's trade in tasks. The flows of intermediate goods connect the countries/sectors, revealing degrees of vertical specialization as well as the geography of the networks. Comparing this type of business-to-business (B2B) trade with trade in final goods (consumption and investment) shows the differences in the topology of the supply and demand sides of global value chains. Using a selection of countries based on their importance as traders and their regional distribution, Figure C.6 plots the flows of final and processed intermediate goods in 1995 and 2012.

Trade in final goods is clearly organized towards well-defined market destinations, mainly the United States, the largest EU economies and Japan. The United States imports a large percentage of its partners' final goods exports, especially from the rest of the Americas. The demand drivers in Europe are concentrated in three major markets: the United Kingdom, Germany and France. Looking at the evolution of the graph over time, the main change is the increasing role of China as importer of final goods (nine arrows point towards China in 2012 against only two in 1995).⁸ No other large changes appear between 1995 and 2012.

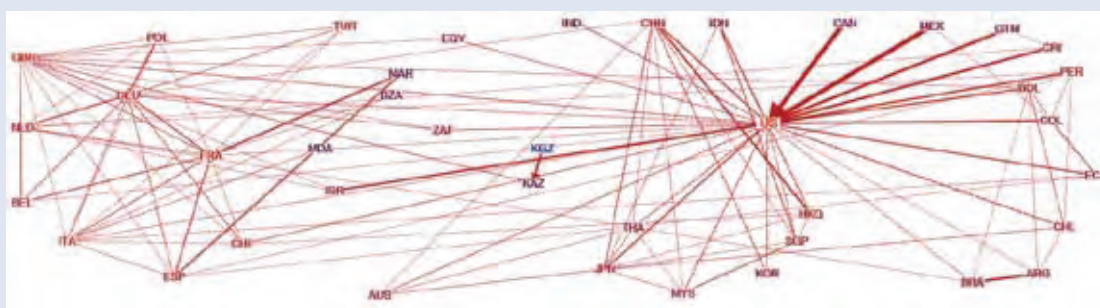
The network of business-to-business (B2B) trade in processed intermediate goods (excluding raw materials) is more diffuse than in the case of final goods. Even if the United States still plays the main role as a market of destination, its position in trade in intermediate goods is less dominant. Here again, the role of China as a market of destination of intermediate goods increases between 1995 and 2012 (16 arrows point towards China in 2012, twice as many as in 1995). Some countries, such as Switzerland, have a larger role as importers of intermediate goods relative to their role in the global market of final goods. This may indicate a higher profile in global value chains, considering the role of intermediate goods in trade in tasks.

Figure C.6: Trade flows in final and processed intermediate goods, 1995 and 2012

(a) Final goods, 1995



Final goods, 2012



Source: Based on UN Comtrade and BEC.

Note: Flows are normalized as a percentage of each country's total exports for the respective categories (final or intermediate goods). Flows smaller than 5 per cent are not plotted; the higher the share, the thicker the arrow.

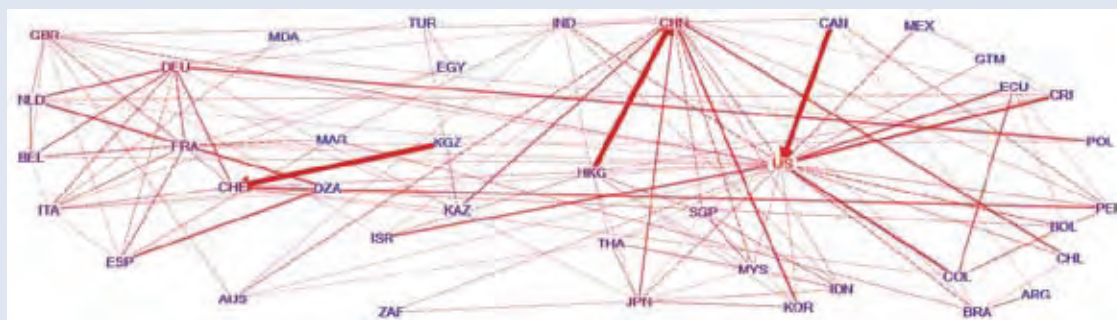
Box C.2: Mapping and measuring the global trade in value-added networks (continued)

Figure C.6: Trade flows in final and processed intermediate goods, 1995 and 2012 (continued)

(b) Intermediate goods (processed), 1995



Intermediate goods (processed), 2012



Sources: Based on UN Comtrade and BEC.

Note: See note to Figure C.6(a).

Baldwin and Lopez-Gonzalez (2013) study the geography of production networks and highlight that GVCs in manufacturing products are a regional phenomenon.⁹ The authors identify three main regions where supply chains are taking place: factory Europe, factory America and factory Asia. The structure of GVCs varies across regions. North American and European supply chains present a hub-spoke structure. In contrast, the processing of final goods in Asian supply chains often involves stops in multiple countries, generating the so-called triangle trade (Baldwin and Lopez-Gonzalez, 2013).

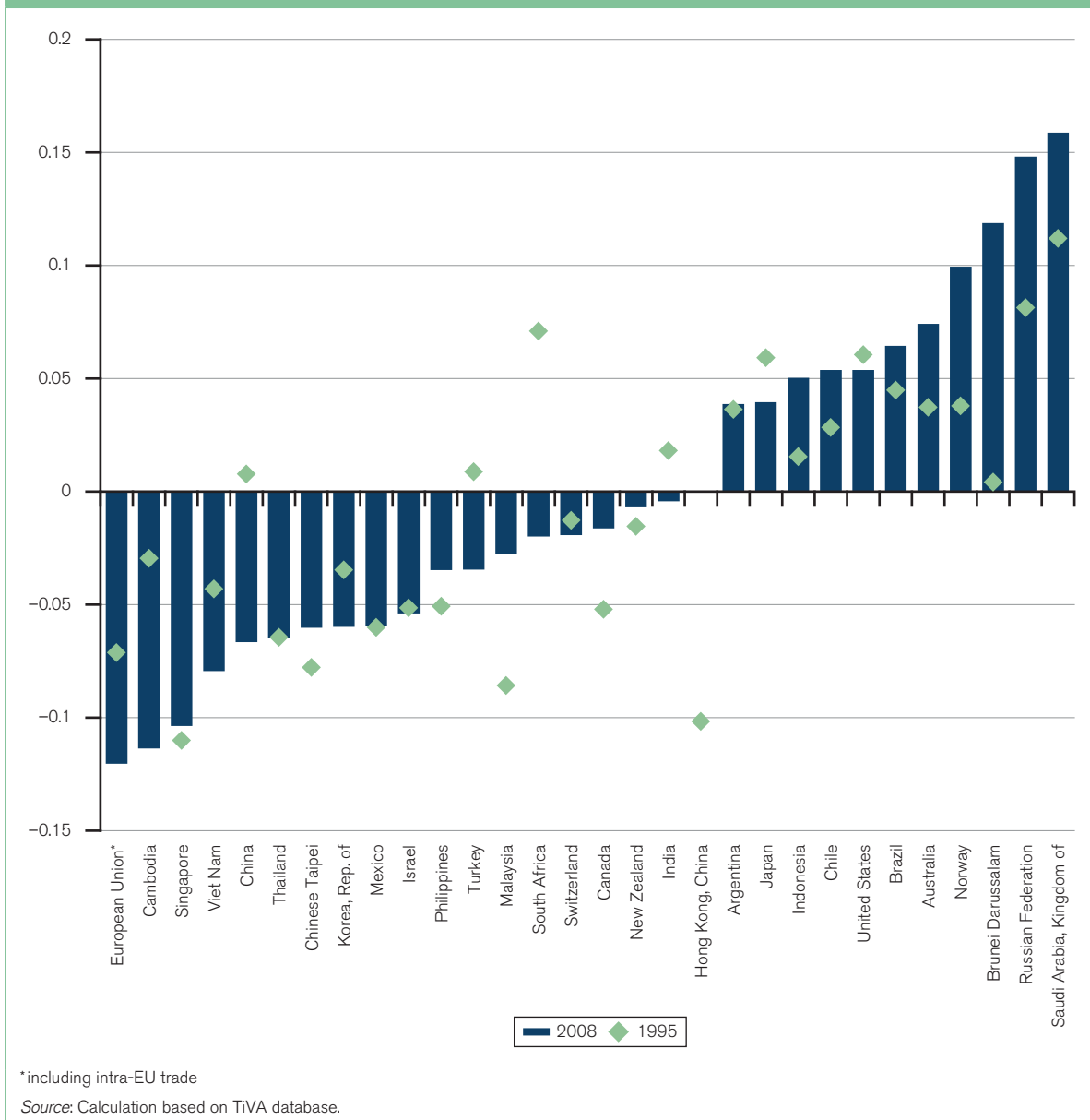
Using a series of alternative exploratory data analysis techniques, Escaith and Gaudin (2014) identify different clusters of exporters.¹⁰ The first cluster is made of large countries, well-endowed in natural resources and able to register a trade surplus by specializing in exports of value added sourced from their primary sectors. The centre of this cluster is well represented by South American countries such as Argentina. A second cluster includes small exporters incorporating a higher content of manufacturing value added in their exports and investing in research and development (R&D). Typically, Central European countries are found in this group. A third group of countries, typically the larger European economies, have relatively high shares in both manufactured goods and services. Ireland and Luxembourg form their own special group due to their small size and deep integration in EU value chains. The fourth cluster regroups countries with a high share of services content in the domestic exports of value added and a low share of manufactured goods. This group is relatively diverse, as it contains economies as different as the United States, Japan and Greece.

As already explained in Box C.1, the GVC participation index is computed as the sum of the share of foreign value added (backward participation) in gross exports and the share of domestic value added of indirect exports (forward participation) in gross exports. Given the definition of the participation index, two countries can have identical participation in GVCs but their position along the supply chain

may be significantly different. In other words, countries can participate in a GVC by specializing in activities upstream or downstream in the production network.

Koopman et al. (2010) propose a GVC position index that indicates if a country specializes in the first or the last steps of production.¹¹ If a country is upstream in the production

Figure C.7: GVC position index for selected economies, 1995 and 2008



network (first stages of production), it is likely that it has a high value of forward participation relative to backward. If a country specializes in the last steps of production (downstream), it is likely that it imports a lot of intermediate goods from abroad and therefore it has high backward participation. The GVC position index is constructed in such a way that countries with high forward relative to backward participation record a positive value. These countries lie relatively more upstream in a supply chain.

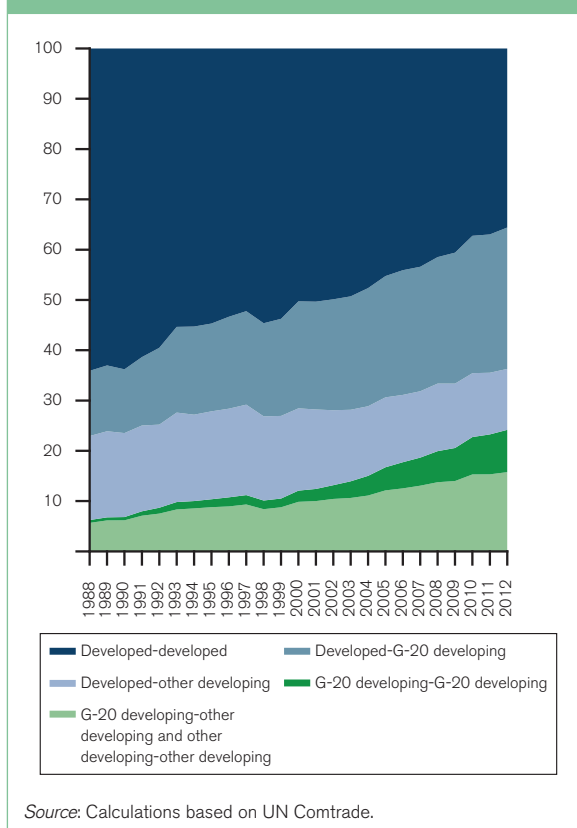
Figure C.7 reports the values of the position index in 1995 and 2008 for the available economies. The Kingdom of Saudi Arabia, the Russian Federation and Brunei Darussalam are the economies that lie relatively more upstream in 2008. As expected, other natural resource-abundant countries, such as Brazil, Australia and Norway, lie upstream too. Cambodia, Singapore and Viet Nam are the most downstream developing countries in the

sample. Comparing the position of countries across time, the experiences of China, Turkey, India and South Africa are very interesting. These countries moved from being relatively upstream to downstream, with the case of China being particularly striking.¹²

(b) Increasing importance of South-South GVCs

The economic literature on supply chains often takes a North-South perspective. However, data show a significant increase of GVCs between developing economies. The share of trade in parts and components between developing countries rose from around 6 per cent in 1988 to almost 25 per cent in 2013. Such an increase is not due to a decrease in the importance of developed-developing value chains. The share of trade in intermediate goods

Figure C.8: Share of imports in parts and components, 1988–2012 (per cent)



between developed and developing countries increased from 30 to 40 per cent over this period. In contrast, trade in parts and components between developed countries decreased by almost a half.

Figure C.8 shows that the increase in the share of trade in intermediate goods between developed and developing countries is mainly due to an intensification of the GVC activities that involve developed and G-20 developing countries. Although on a smaller scale, activities between G-20 developing economies also increased, especially in the 2000s. The role of G-20 developing countries in GVCs is therefore becoming more and more prominent, while LDCs remain at the margin of GVCs.

Developing countries have increased their contribution to value added in the GVCs of other developing countries over time: between 1995 and 2008, the foreign value added originating in G-20 developing countries and other developing economies as a share of gross exports increased for almost all countries (see Appendix Table C.1). G-20 developing economies, in particular, are importing more inputs from abroad and they are contributing more to the exports of almost all developing countries in the sample. In contrast, developed countries today contribute a lower share of value to the exports of almost all G-20 developing countries and other developing countries.

As to FDI flows, developing countries are already the source of much of the world's savings. They hold US\$ 1.8 trillion in FDI abroad (Kharas and Rogerson, 2012). At present, most of these savings are directed towards developed economies but they are shifting towards developing economies. Developing countries are, thus, gradually becoming a growing source of FDI in the South. Malaysia, China and India were among the top five investors in Africa in 2013 together with France and the United States (see UNCTAD, 2013b). Bera and Gupta (2009) show that, in the case of India, FDI from other developing countries is as significant as FDI from the developed world.

(c) Role of services in GVCs

Services trade in GVCs occurs in two ways. Services are traded directly across borders, but to a lesser extent than goods. Secondly, services are embodied in goods and are traded indirectly through them. For example, domestic engineering services, logistics services or financial services that are part of the production of a car will subsequently be exported indirectly, i.e. embodied in the car.

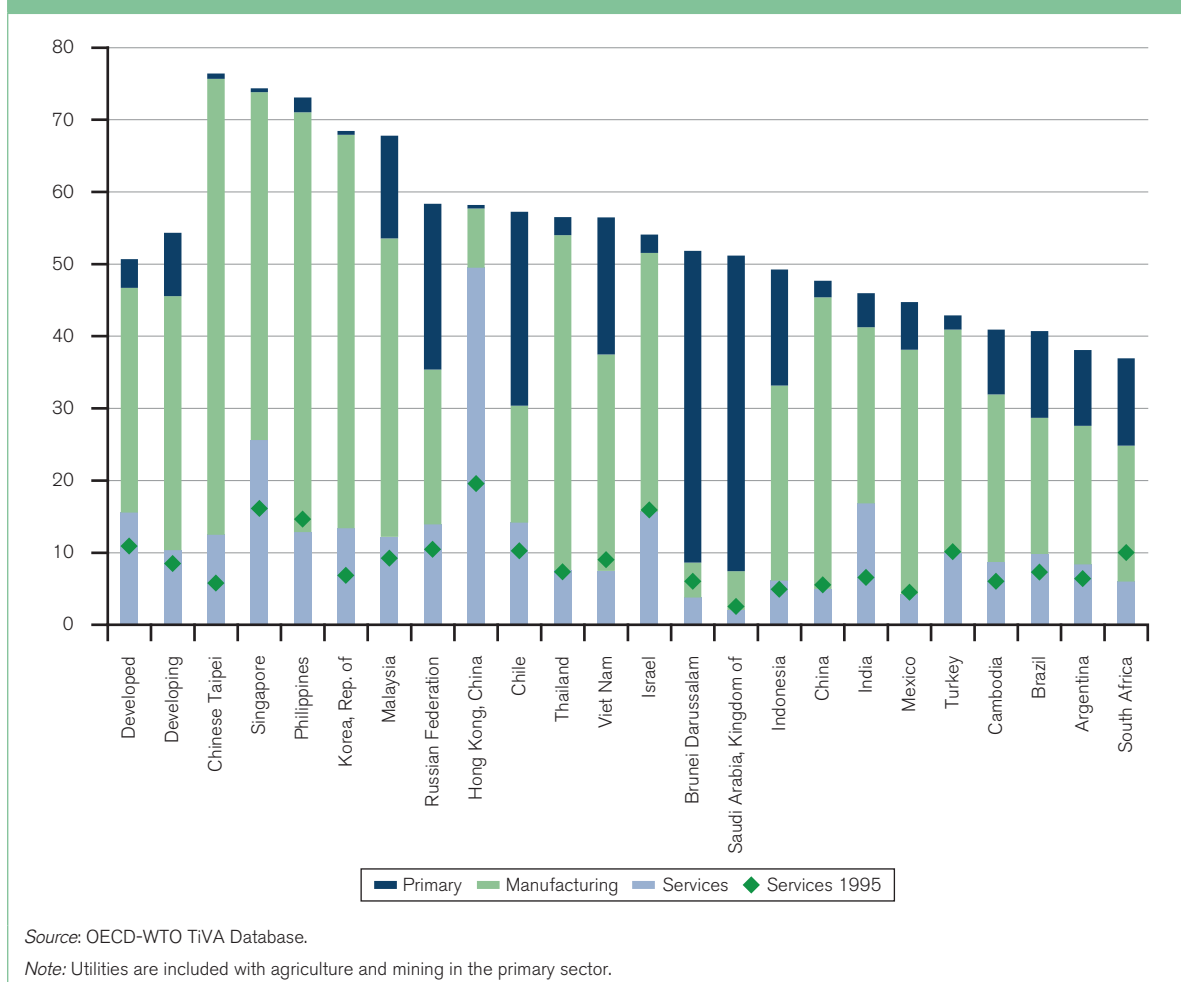
Figure C.9 provides a breakdown of the GVC participation index into three broad sectors: services, manufacturing and primary. The services part of the GVC participation index captures backward (foreign content of services exports) and forward (domestic content of services exports used in total third-country exports) linkages of direct service exports.¹³

Trade in services within GVCs accounts for almost 16 per cent of developed country exports and slightly more than 10 per cent of developing country exports, respectively. Hong Kong (China), Singapore and India show the highest shares (50 per cent, 26 per cent and 17 per cent, respectively). Services trade within GVCs has increased for the majority of developing countries and also slightly for the aggregate between 1995 and 2008. However, for most economies, trade in manufacturing products accounts for the majority of GVC trade, concentrated in the electrical equipment and the chemicals and minerals sectors.

While the decomposition shown in Figure C.9 captures the international backward and forward linkages of services exports, it may underestimate the importance of services for GVCs, as services embodied in manufacturing exports are assigned to the manufacturing part of the index. However, it is also possible to decompose the index differently to measure the services value added that is traded within value chains. In particular, the measure for backward linkages is then defined as the foreign services content of total exports, whereas the measure for forward linkages is defined as domestic services content in total third-country exports.

Figure C.10¹⁴ shows that the services value added traded within value chains constitutes 17 per cent of developing countries' exports, compared with 21 per cent in the case

Figure C.9: Contribution of services, manufacturing and primary exports to the GVC participation by economy, 1995 and 2008 (per cent)



Source: OECD-WTO TiVA Database.

Note: Utilities are included with agriculture and mining in the primary sector.

of manufacturing value added. Meanwhile, in developed countries, services value added traded within GVCs accounts for 22 per cent of exports, compared with the 19 per cent of manufacturing value added. Hence, while direct services exports within GVCs are considerably lower than manufacturing exports, exported services value added, which covers services embodied in manufacturing exports, is only slightly lower than exported manufacturing value added in developing countries and even higher in developed countries.

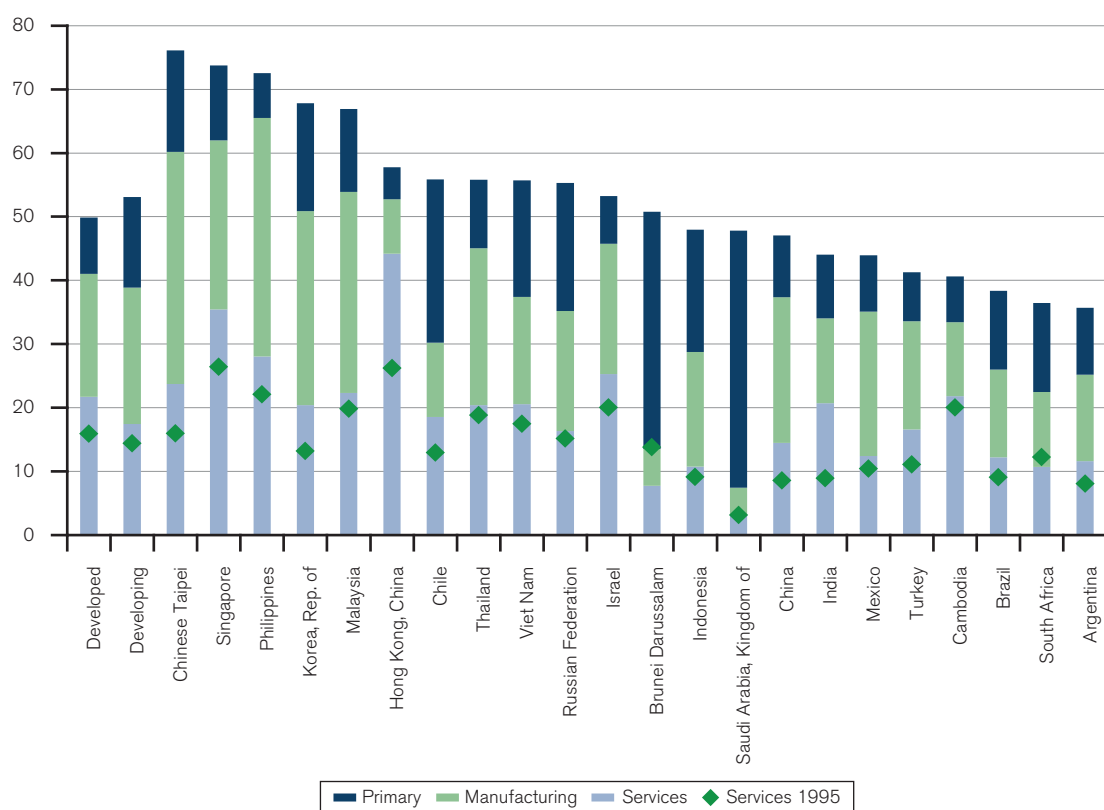
Box C.3 provides more insights regarding indirect services trade, i.e. services embodied in manufacturing exports, which arises from the so-called “servicification” of manufacturing.

Another way to assess direct services trade within GVCs is by looking at services offshoring, which denotes the relocation of service activities from a domestic to a foreign economy. Services offshoring therefore covers both the activities of an independent supplier (arising from offshore outsourcing) and the in-house activities conducted by a foreign affiliate (arising from foreign direct investment).

Traditional trade statistics do not measure trade flows relating to services offshoring because, in contrast to goods, no classification is available to distinguish between intermediate and final products.¹⁵ However, many so-called offshore services fall into the balance of payments items for computer and information and other business services. In the aggregate exports of both these items, the developing countries’ share increased from around 25 per cent to more than 31 per cent between 2005 and 2012, illustrating the relative competitiveness of developing countries and their increasing participation in GVCs. Box C.4 provides examples of developing countries that have successfully engaged in IT offshoring.

LDC participation in value chains through exports of services is limited – for example, the UNCTAD-EORA dataset reveals that the foreign content of LDC exports is 14 per cent compared with a world average of 25 per cent (Escaith and Tamenu, 2013).¹⁶ Looking instead at standard cross-border trade data, the share of LDCs’ in world exports in the two “offshore proxies” computer and information and other business services doubled from 0.16 per cent in 2005 to 0.33 per cent in 2013, which is still

Figure C.10: Contribution of services, manufacturing and primary value added to the GVC participation by economy, 1995 and 2008 (per cent)



Source: OECD-WTO TiVA Database.

Box C.3: “Servicification” of manufacturing

The increased use of services in manufacturing, both in terms of production processes and sales, has been described as the “servicification” of manufacturing, also termed “servicizing” or “manuservice” (Low, 2013). In other words, “services are often integrated or bundled with goods and traded indirectly as intermediate inputs into merchandise production” (Pacific Economic Cooperation Council (PECC), 2011).

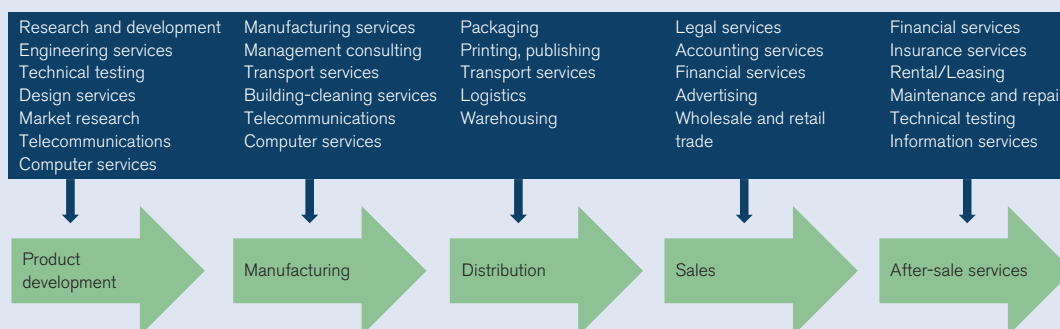
Figure C.11 illustrates this servicification of manufacturing through services for operating the supply chain (embodied) and customer delivery/services (embedded). While embodied and embedded services can often be found in the trade literature, this distinction is not clear-cut as the same service can enter the value chain at different stages. What is more important for trade statistics in value-added terms and hence for analytical purposes is whether the service is supplied internally or at arm’s length (Low, 2013).

Value-added flows are best suited to capturing the phenomenon of the servicification of manufacturing by allowing the measurement of indirect exports of services, whose service value added is embodied in the exported good.¹⁷ Such indirect exports of services can be particularly relevant for domestic small and medium-sized enterprises (SMEs), which often specialize in niche functions and do not have the capability to export directly. Embodied services often allow SMEs to participate in global value chains as direct or indirect suppliers to multinational companies.

Figure C.12 shows the services value-added content of exports of manufacturing industries. Services value added accounts for about one-third of manufacturing exports (32 per cent) in developed countries, which is considerably higher than in developing countries, where it accounts for 26 per cent. Among developing countries, Brunei Darussalam (37 per cent), India (36 per cent), Cambodia (36 per cent) and Hong Kong, China (34 per cent) have the highest services content of manufacturing exports.

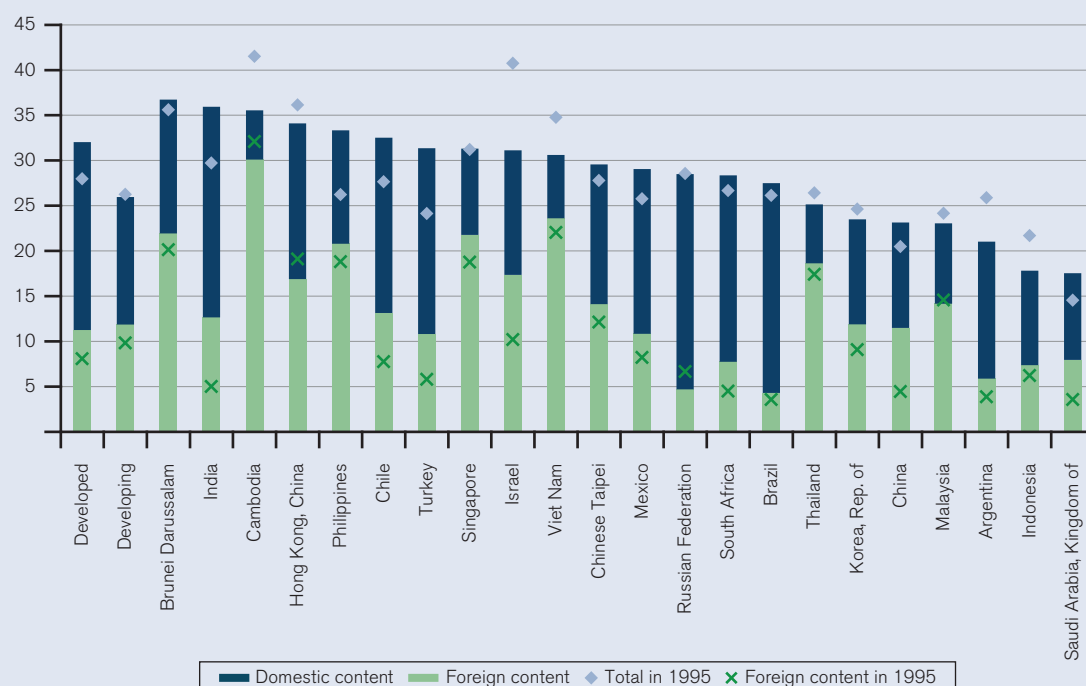
The lower services value-added content in developing countries’ manufacturing exports compared with developed countries’ manufacturing exports, is mainly due to lower domestic services value added in developing countries. In contrast, the share of foreign services value added in manufacturing exports, which captures the international backward

Figure C.11: Examples of services along the value chain



Source: WTO Secretariat.

Figure C.12: Services value-added content of manufacturing exports, 1995 and 2008 (per cent)



Source: OECD-WTO TiVA Database.

Note: Country data are aggregated to calculate the domestic and foreign content of exports for developing and developing economies. The services content of exports for the developed and developing group is slightly lower if based on a simple average across economies.

linkages of manufacturing with respect to services, is similar in developed and developing countries, i.e. between 11 and 12 per cent. Furthermore, the share of foreign services content in developing countries' manufacturing exports increased between 1995 and 2008.

The high share of services value-added content in manufacturing exports underscores the importance of imported and domestic services inputs for the export competitiveness of manufacturing in developing countries. Reforms in services trade across all services are therefore important to improve strategies for enhancing firms' competitiveness (Arnold et al., 2011). Services trade reform will affect both the foreign and domestic value-added content of manufacturing exports, as services trade covers not only the cross-border supply of services (mode 1 as defined by the WTO's General Agreement on Trade in Services (GATS)), but also the supply through a "commercial presence" (mode 3 – a foreign company setting up subsidiaries or branches to provide services in another country) and the "presence of natural persons" (mode 4 – individuals travelling from their own country to supply services in another).

Box C.4: Developing countries and IT offshoring

The increase in IT offshoring over the last two decades has been facilitated by factors such as the proliferation of the Internet and other advances in technology, the language and IT skills of the workforce and the WTO's Information and Technology Agreement (ITA), concluded in 1996, which provides for participants to completely eliminate duties on IT products covered by the Agreement. The ITA has allowed the electronics sector to produce cheaper IT products, which in turn has helped to improve the countries' competitiveness. Examples include Ireland, Israel and India. India's imports have grown much faster than exports, suggesting that these products are used by domestic industries to improve productivity – for example, in the services industry. As a consequence, India's software services exports have increased 11-fold since 2000 (WTO, 2012a) and India has become the predominant player in IT services offshoring, accounting for almost 60 per cent of the global offshoring market (UNCTAD, 2012a).

Table C.3 provides further evidence on the positive trade performance of India and other developing economies such as the Philippines, Malaysia and Costa Rica in the computer services industry. India exported US\$ 33 billion of computer services in 2009, accounting for about 20 per cent of world exports. India is also highly specialized in the export of computer services. The revealed comparative advantage (RCA) measure indicates that its world market share in the export of computer services is 5.49 times higher than its share in total exports of services.

Table C.3 also shows that exports of computer services in several developing economies have been growing at higher rates than in developed economies. Growth has been particularly high in the Philippines, with exports rising from US\$ 89 million in 2005 to US\$ 1.9 billion in 2010 (an annual rate of 85 per cent), suggesting the emergence of a comparative advantage for the country in computer services. Similar success stories can be observed in Malaysia, as well as in two Latin American economies, Argentina and Costa Rica.

Costa Rica experienced an average yearly growth rate of more than 35 per cent from 2005 onwards, exporting more than US\$ 1.2 billion in 2010. Furthermore, a RCA index of 5.28 reflects the fact that Costa Rica specializes in computer services and is hence competitive in exports of these services. Costa Rica is often mentioned as an example of strong integration into international supply chains. Monge-Ariño (2011) states that more than 40 per cent of the country's total exports are related to GVCs. Locally provided services and supplies are important contributors to these GVC-induced trade flows (see also Box C.5).

Table C.3: Top five exporters of computer services by economy grouping, 2005–10
(per cent and US\$ thousand)

	Exports					Imports				
	Value ('000 USD)		Growth p.a. (%)	Share (%)	RCA	Value ('000 USD)		Growth p.a. (%)	Share (%)	RCA
	2005	2010	2005–2010	2010	2010	2005	2010	2005–2010	2010	2010
Least developed countries (LDCs)										
Bangladesh	18,557	37,440	15	0.02	0.61	3,792	4,873	5	0.01	0.04
Uganda	32,825	37,407	3	0.02	0.70	22,191	32,579	8	0.04	0.54
Mozambique	121	5,237	112	0.00	0.18	2,659	691	-24	0.00	0.02
Tanzania	265	4,634	77	0.00	0.04	4,597	9,561	16	0.01	0.16
Samoa	n.a.	972	n.a.	0.00	0.12	n.a.	n.a.	n.a.	n.a.	n.a.
Other developing economies										
Israel	4,528,500	7,699,500	11	4.59	6.24	n.a.	n.a.	n.a.	n.a.	n.a.
Philippines	89,000	1,928,000	85	1.15	2.69	62,000	109,000	12	0.13	0.30
Malaysia	435,260	1,453,770	35	0.87	0.81	379,295	1,206,030	34	1.44	1.34
Costa Rica	254,378	1,216,190	37	0.72	5.56	10,721	20,844	14	0.02	0.36
Hong Kong, China	207,000	812,000	31	0.48	0.15	371,000	488,000	6	0.58	0.30
Developing country G20 members										
India	n.a.	33,383,179	n.a.	19.89	5.76	1,048,870	2,175,840	16	2.59	0.58
Russian Federation	374,570	1,273,280	28	0.76	0.56	378,620	1,637,450	34	1.95	0.71
Argentina	235,210	1,237,340	39	0.74	1.88	190,730	445,356	18	0.53	1.00
Brazil	80,223	195,100	19	0.12	0.13	1,656,840	3,414,480	16	4.07	1.76
Korea, Republic of	n.a.	149,000	n.a.	0.09	0.03	n.a.	170,600	n.a.	0.20	0.06
Developed economies										
Ireland	19,369,000	37,196,458	14	22.17	7.51	378,053	752,273	15	0.90	0.22
Germany	8,415,411	16,304,988	14	9.72	1.37	8,587,027	14,066,711	10	16.76	1.66
United Kingdom	8,476,394	9,952,424	3	5.93	0.79	3,330,921	5,256,661	10	6.26	1.01
United States	3,554,000	8,771,000	20	5.23	0.32	2,000,000	18,394,000	56	21.91	1.54
Sweden	2,608,025	6,813,995	21	4.06	2.04	1,384,166	2,341,998	11	2.79	1.50

Source: WTO Secretariat, based on WTO trade in services database.

Note: RCA (revealed comparative advantage) is defined as the ratio of a country's world market share in computer services exports (imports) to its world market share in total services exports (imports). China was not included due to lack of disaggregated data.

significantly lower than the share of LDCs in world exports of commercial services (0.65 per cent) and merchandise (1.14 per cent) in 2013.¹⁸

While transport services (22 per cent) and communication services (8 per cent) are the second- and third-biggest components of LDCs' commercial services exports, the former are dominated by travel services, i.e. tourism, which grew by 7 per cent to US\$ 5.9 billion in 2012, representing 45 per cent of LDCs' receipts. Box C.5 illustrates how the tourism value chain can play a role for the development of LDCs and small, vulnerable economies (SVEs).¹⁹

In general, one obstacle to the participation of LDCs and other developing countries in supply chains is high transport

costs. For remote or landlocked countries, in particular, services might offer a greater potential for participation in GVCs, if they can be supplied via information and communication technologies (ICT) such as IT services, financial services or many business services. As Box C.4 has illustrated, India and the Philippines are examples of developing countries that have, despite being distant from large European and US markets, become major offshore locations for computer and other business services. In a ranking of the top 100 outsourcing destinations for these services, the top eight cities are either located in India (six cities) or the Philippines (two cities) (Tholons, 2013).

The measure of regional intensity (RI) of exports provides an indication of the extent to which services

Box C.5: The tourism value chain as an opportunity for development

The tourism value chain includes services related to travel organization, which often involves international travel agents and tour operators, international transport and a variety of services and goods provided in the destination country (see Table C.4). Furthermore, tourism indirectly benefits the domestic economy by contributing to the development of other sectors, such as agriculture (e.g. food supply to hotels), construction, communications, utilities (e.g. supply of electricity and water to hotels), and conference and events management. The demand for these services, some of which are labour intensive, creates employment opportunities, especially for semi-skilled people in rural areas within LDCs.

Table C.4: A simplified tourism value chain

Accommodation	Food and beverages	Souvenirs and Entertainment	Transportation	Excursions
Hotel	Restaurant	Souvenir shop	Regional and local	Guides
Resort	Bar	Market	Bus, taxi, car rental	Tour operators
Guesthouse	Food stall	Sellers	etc.	Travel agencies
Lodge	Market	Craftsmen		etc.
etc.	etc.	Festivals		
		Theme parks		

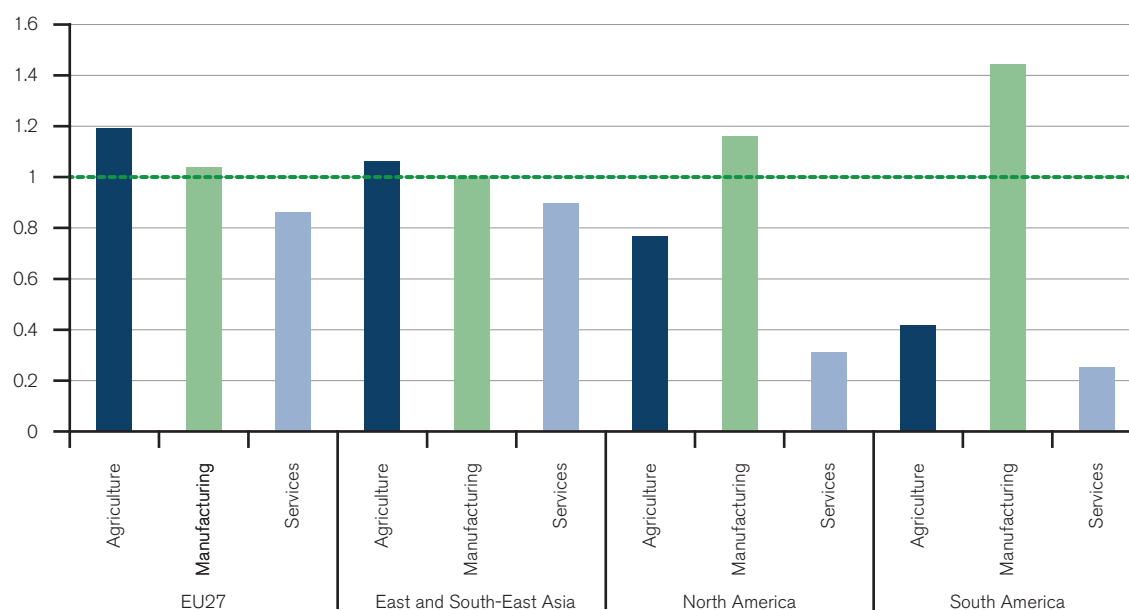
Source: International Trade Centre (ITC).

Cambodia, Tanzania and Uganda are the largest LDC exporters of tourism services, accounting for 15, 14 and 9 per cent respectively of LDCs' travel exports. Tourism receipts are also of particular importance to many small islands in the African, Caribbean and Pacific (ACP) group of countries, such as Vanuatu and Samoa. For instance, tourism played an important role in the graduation from LDC status of Cabo Verde and the Maldives in 2007 and 2011, respectively (Honeck, 2012). In addition to the Maldives, a number of small, vulnerable economies are tourism-oriented. These include the Dominican Republic, Fiji, Grenada, Honduras, Jamaica and Nicaragua, as well as numerous small Caribbean islands in the Lesser Antilles.

Tourism-oriented LDCs have attempted to measure the contribution of various factors in the tourism value chain. For example, in Tanzania, hotel accommodation accounted for 25.3 per cent of tourists' total spending in 2010, followed by shopping (17.8 per cent) and food and beverages (16.8 per cent). Mountain-climbing represented an additional 13.5 per cent. In Uganda, a visitor exit survey showed that, in 2011, accommodation was the largest expenditure category (44 per cent), followed by souvenirs (16 per cent), food and beverages (15 per cent), transport (12 per cent) and excursions (8 per cent).

Christian et al. (2011) identify four ways in which countries can upgrade within tourism value chains. First, they can aim to attract FDI to upgrade the size and quality of their hotels. Secondly, tour operators can functionally upgrade their services, from being local guides to excursion operators, to local or national organizers for an incoming agent. Thirdly, the use of IT renders Internet-based marketing and the use of online reservation systems possible. Finally, countries can deepen or expand tourism products, such as eco-tourism, cultural tourism or "sea, sand and surf" holidays.

Figure C.13: Regional intensity of exports by aggregate industries for selected regions, 2008
(ratio of shares)



Source: Authors' calculation based on the OECD-WTO TiVA database.

Note: The following economies are covered by regional aggregates: *EU27*: All EU countries except Cyprus (and Croatia) are covered; *East and South-East Asia*: Brunei Darussalam; Hong Kong, China; Indonesia; Japan; Cambodia; Republic of Korea; Malaysia; the Philippines; Singapore; Thailand; Chinese Taipei; Viet Nam; *North America*: Canada, Mexico, the United States; *South America*: Argentina, Brazil and Chile. A regional intensity indicator larger (smaller) than 1 indicates that a particular industry is traded more (less) regionally relative to overall trade.

offer opportunities for remote developing countries to participate in GVCs by showing whether services are traded more globally than goods.^{20,21} In particular, a RI indicator larger (smaller) than 1 indicates that a particular industry is traded more (less) regionally relative to overall trade.

Figure C.13 shows the RI indicators for gross exports in agriculture, manufacturing and services for four regions.²² In all four regions, i.e. the European Union, East and South-East Asia, North America and South America, intra-regional trade is relatively more important for agriculture and manufacturing than for services. In particular, in all four regions, manufacturing trade is more regionalized than overall trade, while services tend to be traded more globally, i.e. exported to countries outside the region. Evidence for less regionalism in services trade within GVCs is also provided by Baldwin and Lopez-Gonzalez (2013), who show that much of the value chain trade between the United States and the European Union is trans-Atlantic, which is likely to reflect the activities of multinational enterprises.

While market proximity might be less relevant for offshoring services, other factors, as explained in Section C.4, such as language and IT-related skills of the workforce, ICT infrastructure, a sound business environment and government support, are still significant factors for developing countries wishing to enter and move up GVCs. Furthermore, while delivery costs might

be low, barriers to trade in services typically come in the form of behind-the-border regulations, which are still significant in many sectors such as professional services or financial services (Borchert et al., 2012).

Findings from gravity modelling suggest that higher trade costs hold back services from exploiting their full trade potential. Using a measure of bilateral trade cost based on the ratio of external to internal trade, Miroudout et al. (2013) find that trade costs are much higher for services than for goods. Focusing on bilateral trade between Canadian provinces and the United States and the rest of the world, Anderson et al. (2013a) find that the incidence of geographical barriers for services trade, calculated as the ratio of predicted to hypothetical frictionless international services trade, is approximately seven times larger than for goods trade.

2. GVCs: opportunities and challenges for development

Before the mid-1980s, achieving industrialization was largely synonymous with building the whole supply chain within one economy. This was done successfully by early entrants, such as Japan, the Republic of Korea and Chinese Taipei. Requiring decade-long learning by doing, this road led to durable industrialization. Nowadays, unbundled production implies that economies can specialize in specific tasks instead of products or industries.

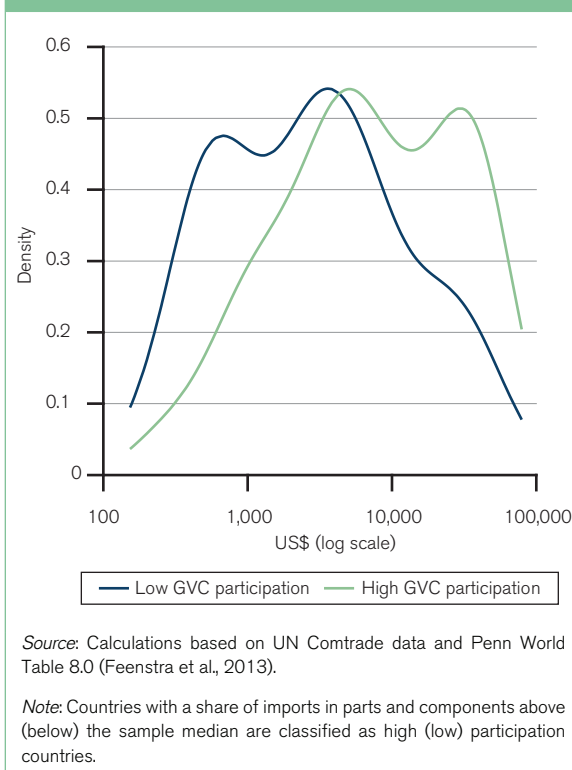
Baldwin (2011b) argues that because the learning process involved is less complex, industrialization is easier to achieve but it might also be less durable because capabilities are now narrower and therefore easier for competitors to replicate. Nonetheless, the author argues that resisting GVC participation may be ineffective, because it hinders domestic firms in accessing inexpensive or more sophisticated inputs, thereby potentially causing their products to be uncompetitive in world markets. Consequently, he suggests that economies may now be better advised to learn from experiences of those that have industrialized through GVCs, such as Thailand from the late 1980s, rather than from the early entrants mentioned above.

Some uncertainty still remains regarding the ultimate impact of GVCs on development. The literature on GVCs is still evolving and has some limitations in the sense that it is not clear whether its results generalize from the sector or firm level to favourable development outcomes at the country level. In addition, it has not been shown whether GVC participation *causes* growth. Finally, it is uncertain whether development successes through GVC integration, such as for instance the experiences in East Asia, can be replicated in a similar fashion elsewhere. It is still mostly unclear how differences in underlying conditions among countries affect the nature of their GVC participation. For instance, network and agglomeration effects are likely to work in favour of large countries or countries close to them. This makes it difficult to generalize their experiences, especially when considering small and remote countries.

Yet, evidence is accumulating which suggests that GVC participation may at least be *associated* with higher growth. The International Monetary Fund (IMF) (2013) finds that output growth is associated with more exporting and importing of value added, which proxies for GVC participation. Also, data comparing incomes of countries with low and high participation in GVCs tend to confirm this association. High-participation countries are generally richer than those with low participation. Their distribution of incomes lies further to the right in Figure C.14. Furthermore, GDP growth rates tend to increase as countries increase their participation in GVCs (UNCTAD, 2013a). Case study evidence also generally suggests that countries which adapted to the new GVC trend instead of pursuing domestically-based industrialization experienced better outcomes in the activities and sectors studied.²³

This section explores the results of the literature on GVCs from the viewpoint of a developing country in a chronological manner. It highlights that GVCs offer an opportunity to developing countries to integrate into the world economy at lower costs. But gains from GVC participation are not automatic. While initial integration into GVCs can have considerable development benefits, competition is fierce in low-capacity tasks in which such initial integration is typically achieved. Therefore, developing countries' gains

Figure C.14: Distribution of GDP per capita by high and low participation in GVCs, 2012



capture is typically low initially. To address this, upgrading of activities performed, aimed at increasing the value added supplied, is often posited as a possible way to underpin further development through GVCs.

(a) Integrating into GVCs

Integration into GVCs exposes a country to trade and foreign investment, which can result in development benefits through knowledge and technology spillovers. However, not all countries may achieve integration right away. To integrate into a GVC, a country needs to be – or quickly become – competitive in world markets in the activity it performs. If integration is achieved, it typically triggers favourable structural transformation by relocating labour from agriculture to higher-productivity and higher-paying jobs in manufacturing or services.²⁴

(i) *Technology and knowledge transfers through imports and FDI*

Integration into GVCs constitutes a way for countries to reap dynamic gains from trade. Physical and human capital, institutions and technology are key drivers of growth (see Section B.1). GVC integration in turn has an impact on these drivers. The focus here will be mainly on technology and knowledge transfers, which Piermartini and Rubinova (2014) have shown to be higher across countries linked through GVCs. Technology and knowledge transfers are affected in two ways by GVC participation (WTO, 2008).²⁵

First, to the extent that knowledge about the production technology travels in the exchange of goods, these spillovers will be created. Secondly, technology can also be transferred if foreign firms invest directly in the domestic economy.²⁶ Consequently, the empirical literature has focused on the effects of imports and FDI to analyse these spillovers.

Technology transfers are stronger for imports of intermediate goods – which tend to rise with GVC participation – than for imports of final products (Amiti and Konings, 2007). Furthermore, spillovers are higher when these imports are sourced from industrialized countries because they presumably embody a higher technological content than imports from developing countries (Keller, 2000). This suggests that integration, particularly with industrialized countries, through GVCs may benefit developing countries.

FDI is the second key channel for technology spillovers in GVCs. These spillovers are stronger for imports often associated with FDI, such as capital goods, machinery and ICT goods (Acharya and Keller, 2009). Blalock and Gertler (2008) find that foreign firms have an incentive to generate these spillovers. Once they have invested in the domestic economy, they typically make production technologies widely available to avoid hold-up by any single domestic supplier. Thereby, higher FDI tends to increase the quality of exports in developing countries (Harding and Javorcik, 2012). Furthermore, FDI spurs domestic investment by lowering the costs of adopting new technologies (Borenszstein et al., 1998) and by increasing competition in the domestic market (Iacovone et al., 2011).²⁷ Mileva (2008), for instance, shows for ten countries in the Commonwealth of Independent States and Albania that FDI flows indeed led to domestic investment.

(ii) *Capability building: adapting knowledge and technology to local conditions*

Capabilities refer to the ability to operationalize knowledge and technology efficiently in prevailing conditions and they determine whether and how a developing country can integrate into GVCs (Lall and Pietrobelli, 2002; 2003; 2005). Capabilities are a broad concept and include organizational methods, managerial quality, work practices, ability to meet international standards, product placement and knowing where to source and how to best combine inputs in a cost-effective way in a specific location.²⁸ In turn, GVC integration can create incentives to build capabilities when access to large world markets creates profitable opportunities.

Capabilities can be built through various channels. These include worker training, interaction with suppliers or reverse engineering (Morrison et al., 2008). Useful organizations in this respect are those providing technology diffusion services such as metrology, standards, testing and quality assurance as well as technical and organizational

consultancies. Developing countries' policies and institutions affecting international flows of equipment and services, human capital and foreign investments are crucial in facilitating this capability building.

Furthermore, some capabilities can only be acquired through direct interaction with foreign clients. Through these interactions, GVCs provide information on the global market's requirements in terms of products, processes, technology and standards (Pietrobelli and Rabellotti, 2011). This information is so valuable that local firms striving to become suppliers to multinational corporations in GVCs often enter into loss-making contracts initially with those multinationals. During these initial contracts, they learn to produce to the specifications of the multinational. This type of investment in capabilities yields two pay-offs: (i) productivity gains, allowing the local firm to produce at lower prices (Blalock and Gertler, 2008); and (ii) positive reputation effects of being a preferred supplier to a well-known multinational, which facilitates establishment of other business relationships (Sutton, 2012). These investments in capabilities naturally require capital while not generating tangible collateral. Consequently, it is not surprising that availability of financing is perceived as a main obstacle to GVC integration by many firms (see Section C.4).

Successful capability building leads to competitive advantage i.e. firm level competitiveness in markets where above-average profits may be earned because some firms' capabilities are hard to replicate. Costa Rica has managed to build considerable competitive advantage in a variety of sectors and constitutes a much cited example of capability building through FDI (see Box C.6).

Capability building remains an ongoing process. As a country develops and wages rise, its advantage in labour-intensive activities will fade, therefore requiring a gradual reorientation of its industrial structure. Hanson et al. (2013) illustrate that the main export products of most successful developing countries have changed in the past 20 years. For instance, China's top two export products were apparel and textile products 20 years ago, while they are now office machines and electric machinery.

The stakes are high in capability building because only countries able to produce a minimum acceptable quality level will be able to integrate into GVCs. Sutton (2012) highlights that, because inputs have a world market price, a country has to be able to produce a good from those inputs that has a world market price of at least the sum of the input costs. If this is not the case, the country will not be able to sell, even if wages are reduced to zero. As a result, only countries close enough to the "window" of competitiveness will be able to join GVCs (see Box C.7). This implies that developing countries will have to reach certain threshold levels of efficiency and quality to become attractive offshoring destinations, even if their wages are low.

Box C.6: Capability building and spillovers through FDI in Costa Rica

Rodriguez-Clare (2001) provides extensive and detailed evidence of Costa Rica's early success in capability building. He ascribes particular importance to its investments in education, widespread knowledge of English, stable political situation, low corruption level and tax incentives.²⁹ Incentives were not aimed at any specific company but rather at developing a "cluster" of investors. The country is known for attracting large FDI flows from computer chip manufacturer Intel, which by late 1999, within less than three years of its first investment in Costa Rica, had invested US\$ 390 million in the country. This accounted for 60 per cent of GDP growth and 40 per cent of export growth in that year and allowed Costa Rica to turn its trade balance into surplus. Intel's employment impact was also considerable, creating 2,200 jobs in a country with a labour force of roughly 2 million. Costa Rica's ability to attract Intel, however, was not only driven by the reasons listed above but by the fact that a group of Costa Rican representatives had set out to convince Intel to invest in their country when Intel decided to diversify away from East Asia.

The positive feedback from foreign companies already present in Costa Rica, such as the medical equipment manufacturer Baxter, was crucial for Intel's decision. While the existing foreign-owned companies helped to attract Intel, its arrival in turn gave a boost to the creation of a cluster of FDI from electronics manufacturers (Remec, Sawtek, Conair, Reliability, Protek, Sensortronics and Colorplast). It also helped to strengthen the medical devices sector, showing how precision-manufacturing skills can be transferred across sectors. Baxter decided to expand its production and a competitor, Abbott, established a plant. Bamber and Gereffi (2013) document how, during the last decade, Costa Rica has further diversified its exports of medical devices from simple to more complex products. However, R&D activities have not yet been attracted, as foreign companies prefer to keep these close to their headquarters. Capabilities built through these relationships have been diffused throughout the economy. All senior managers in the medical devices sector surveyed by these authors were Costa Rican and other firms benefited from spillovers when employees of these leading firms switched jobs.

However, the 2014 announcement by Intel to move its Costa Rican manufacturing operations to Asia highlights relocation risks to which GVCs can expose even those countries which have successfully leveraged GVCs for their development (see Section C.3 for more details). Intel will retain roughly half of its workforce in Costa Rica, working mainly on service operations (Inside Costa Rica, 2014).

Box C.7: GVCs, competitiveness and trade integration

Baldwin (2011) provides an intuitive description of how the rise of supply chains has changed world trade and countries' integration into the global economy. He first notes that tariff (τ), transport (T), and coordination costs (χ) impose a wedge between the world price of a good (p^w) and its domestic price. Thus, imports will cost $p^w\chi\tau T$, i.e. more than the world price.³⁰ Analogously, a country will only be able to be competitive with an export product in foreign markets if it produces the good at a cost lower than $p^w(\chi\tau T)$ to make up for the trade costs.

The ascending line in Figure C.15 shows that the country can produce some intermediate products at a low cost; these are at the left end of the x-axis, while others, which are costly to make domestically, are at the right end of the x-axis. The solid horizontal lines portray the initial situation with high trade costs. The country is not efficient enough to export anything in this case and imports products at the far right, where the ascending line exceeds the upper solid line. Now, with the advent of the ICT revolution, trade and coordination costs decrease, bringing the horizontal dotted lines closer together. As a result, the country now starts exporting, but also imports more. Now assume in addition that there is a final product requiring two intermediate inputs, Part 1 and Part 2. In a GVC world, the country can now participate in the production of this good by exporting Part 1. Meanwhile, it is very costly for the country to produce Part 2. Attempting to produce domestically Part 2 to export the final good would likely be an ill-fated strategy; its competitiveness would suffer from Part 2's high price.

Figure C.16 illustrates an initial situation in which a country has such low capabilities that the local production cost of all intermediate goods is higher than the world price plus trade costs required for importing. This country would thus import all intermediate goods. Given its high local production costs, it is not profitable to export anything. However, the country's capabilities are sufficiently developed that an additional investment, e.g. by a foreign company, in technology transfer and capability building can lower the cost for certain activities to such a degree that the country becomes competitive in the world market. Sutton (2012) argues that some low-income economies in Africa are now in precisely this situation. Central and Eastern European (CEE) countries were in the same situation in the early 1990s.

Box C.7: GVCs, competitiveness and trade integration (continued)

The fall of the Berlin Wall in 1989 made Western products available for the first time, rendering many local production techniques and products utterly uncompetitive. Many CEE factories had to close because their end products effectively were worth less in the market now than embedded inputs' value at Western factories' gates. Consequently, the first half of the 1990s was marked by deindustrialization and high unemployment in these countries. They only started reaping the benefits of trade opening in the late 1990s, when they acquired – alongside FDI flows – the technology and capabilities to transform these inputs in an efficient manner that was valued in the world market. This gradually shifted ever-larger parts of their cost curve down.

Figure C.15: Lower trade costs and resulting international integration through GVCs

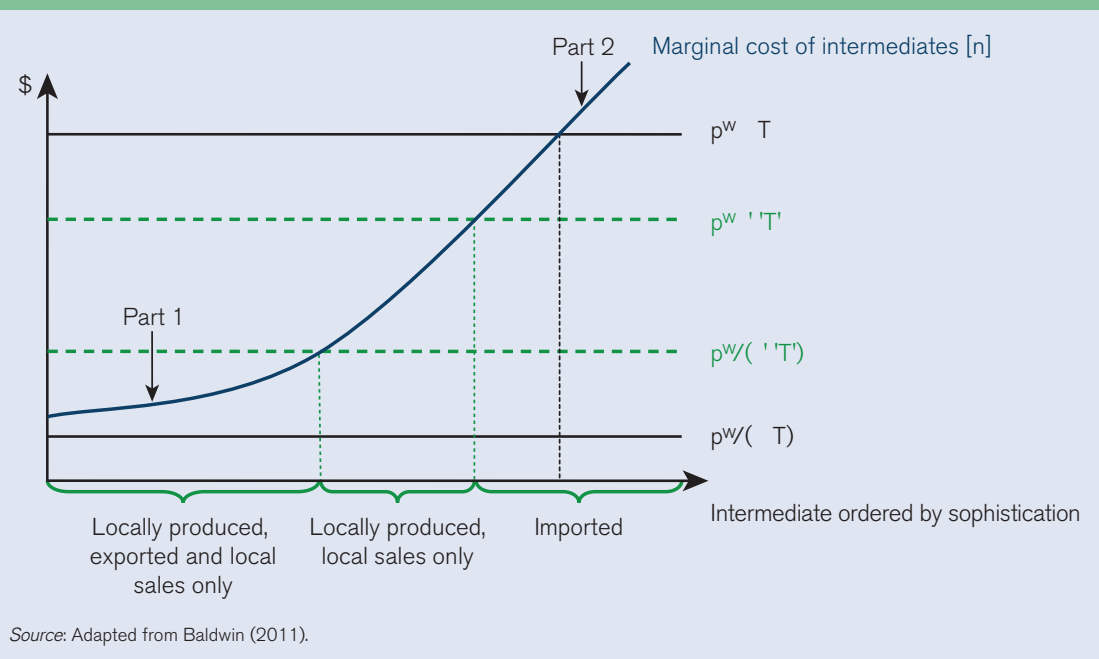
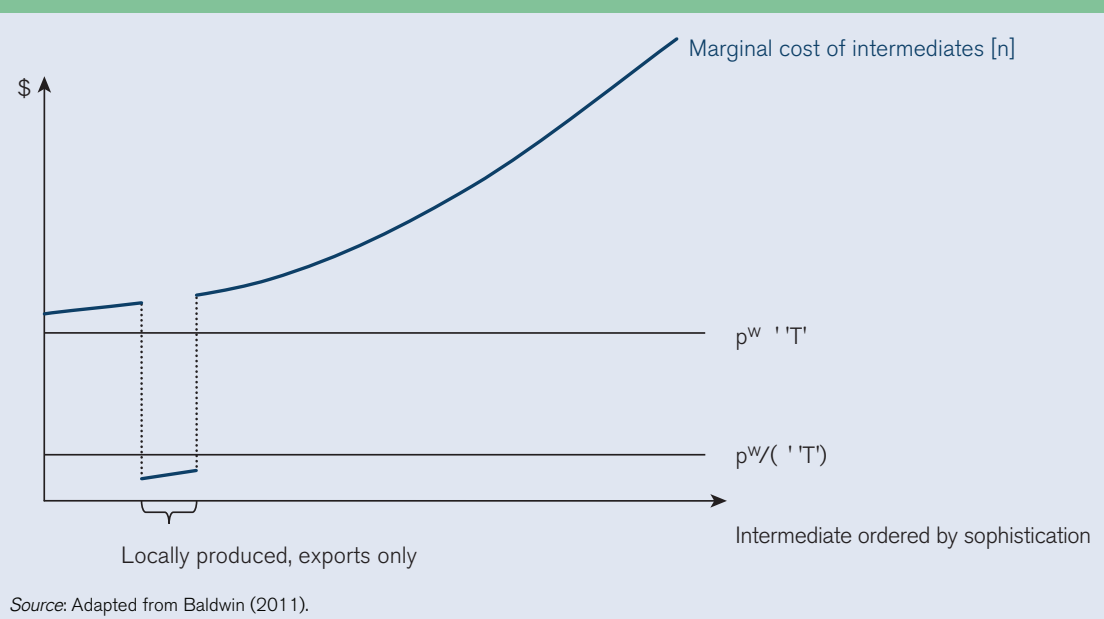


Figure C.16: Integrating a country into GVCs through technology transfer



(iii) Initial integration into GVCs: from agriculture to manufacturing and services

Initial integration into GVCs often triggers beneficial structural transformation. This tends to be the case for countries at early stages of development during which large parts of the population are employed in subsistence agriculture. Initial GVC integration is typically associated with large productivity and welfare gains in these countries because labour is moved into manufacturing or services. Although activities in the latter sectors also tend to be labour intensive and low skill in the early stages of development, their productivity is generally higher.³¹

The growth of China until one decade ago could be viewed as a process of moving large swathes of the workforce into basic manufacturing. Indeed, shares of manufacturing income in total income have been rising for many emerging markets as they have developed (Timmer et al., 2013). In this regard, integration into GVCs is quite similar to the industrialization experienced by other countries prior to the “second unbundling” (i.e. the unbundling of factories and offices, meaning that not only goods but also tasks are traded). The main difference is that GVCs can make industrialization easier to achieve as initially only certain limited tasks have to be perfected to international quality levels.

Typical beachhead sectors for initial GVC integration are those where capabilities can be acquired easily. In manufacturing, the apparel sector is a typical first beachhead for many countries in initial stages of development. It is generally accepted that the clothing industry played a leading role in East Asia’s early export growth, and participation has created new jobs and contributed to capability building.³² However, the skills needed to manufacture a product to international standards in the sector are ubiquitous, and consequently value added in the manufacturing stage is low (but higher than in subsistence agriculture). Remuneration of labour involved in manufacturing generally amounts to less than one-tenth of the value of the final product.³³

In services, call centres and IT back office activities have relatively low entry barriers even for low-income small countries. However, they require sufficiently educated workforces (Fernandez-Stark et al., 2011a). Integration may be especially beneficial for landlocked poor countries or island countries in which physical transport infrastructure is lacking or shipping costs remain high due to the small scale of activities. India has illustrated how this sector, concentrated in mainly two large cities in the country, may be a powerful engine for export growth. Based on these types of experiences, Gereffi et al. (2011) underline that small countries may be able to learn from GVC integration successes in large countries, as these are often regionally concentrated and could therefore possibly be replicated in smaller nations.

Most countries in Sub-Saharan Africa and some countries in Central Asia and Latin America are still struggling with this initial GVC integration. Greater difficulties for these

economies in integrating – particularly into manufacturing GVCs – may be due to their relatively large distances from any of the three factory regions in Europe, Asia and North America, described in Section C.1(a). Gibbon and Ponte (2005) point out that Africa has long been struggling because many of its firms lack the necessary competitive advantage and experience difficulty in meeting world market requirements. This is because they are too small and unspecialized, insufficiently vertically integrated or financially weak.³⁴ By some estimates, Kenya’s factory floor productivity is close to China’s but when other indirect costs are taken into account, Kenyan firms have a 40 per cent productivity gap relative to Chinese firms.

However, there are some African success stories in specific sectors and countries and their number is rising. Sutton (2012) highlights that some low-income countries in Africa, including Ethiopia, Kenya and Tanzania, have now improved their institutions and capabilities sufficiently to reach GVC integration in many areas. He points out that their performance over the next decade could be crucial in setting positive precedents and achieve geographical spillovers within Africa. This corresponds with an earlier study by Eifert et al. (2005), which points out that although indirect and business-environment-related losses depress the overall productivity of African firms, these costs vary considerably across countries, suggesting that the emergence of those nations with stronger business communities and better business climates could indeed be imminent.

(b) Distribution of gains within GVCs

A key issue for developing countries is that gains in GVCs are often distributed very unequally, particularly for the activities where integration first takes place. For instance, more than 95 per cent of personnel in the apparel value chain are employed in assembly line positions, mostly located in developing countries, yet they receive less than 10 per cent of the product’s value (International Labor Office (ILO), 2005; Nathan Associates Inc., 2006; Park et al., 2013).

Suppliers in developing countries produce directly or indirectly for the lead firm of the GVC. Firms in developing countries need access to these lead firms, which are generally headquartered in developed countries, to use their distribution channels in destination markets. What distinguishes lead firms is that they control access to major resources, such as product design, new technologies, brand names or consumer demand (Gereffi et al., 2005). These resources are acquired through an accumulation process, such as continuous advertising to establish brand recognition, and can therefore not be easily replicated (Teece, 1988).³⁵ Lead firms mostly concentrate on activities upstream or downstream from manufacturing, such as logistics, finance, design and marketing, which are more skill intensive (Fernandez-Stark et al., 2011b).³⁶ Based on the lead firm’s role, GVCs can be distinguished as buyer- or producer-led (see Box C.8).

Box C.8: Buyer- and producer-led supply chains

Depending on the nature of the lead firm, GVCs can be distinguished as producer- or buyer-driven supply chains (Gereffi, 1994).

In producer-driven GVCs, large, usually multinational, manufacturers play the central roles in coordinating production networks (including their backward and forward linkages) and are typically involved in the supply of critical components. This is common in capital- and technology-intensive industries, such as automobiles, aircraft, computers, semiconductors and heavy machinery. Profits in these chains are derived from scale, volume and technological advances.

In buyer-driven GVCs, lead firms are large retailers, marketers and branded manufacturers. Here, profits are created based on a combination of high-value research, design, sales, marketing and financial services. Lead firms in these GVCs are mostly not involved in the production process itself but only supply codified specifications to developing country contractors that carry out production. Tiered networks are the norm, in which large first-tier suppliers sub-contract certain tasks to smaller second-tier suppliers, and so forth. Buyer-led GVCs are common in consumer-goods industries, such as garments, footwear, toys, handicrafts and consumer electronics, where they have displaced traditional manufacturers as the leaders given their information advantage. The retailers in these GVCs use sophisticated technology, including bar coding and point-of-sale scanning, to provide immediate and accurate information on product sales. Capturing trends in demand allows them to quickly react to changes, thereby increasing revenues and lowering risks by getting suppliers to manage inventories.

Table C.5: Key determinants of gains distribution in GVCs

Type of GVC structure	Complexity of transactions	Ability to codify transactions	Capabilities in the supply base	Degree of explicit coordination and power asymmetry
Market	Low	High	High	Low ↑ ↓ High
Modular	High	High	High	
Relational	High	Low	High	
Captive	High	High	Low	
Hierarchy	High	High	Low	

Source: Gereffi et al. (2005).

Gereffi et al. (2005) point out that how gains are distributed between partners in a GVC-based business relationship depends on their relative bargaining power. The relative bargaining power in turn depends on three factors: (i) how rare and coveted the capabilities of the supplier are and whether the transaction can easily be shifted to a different supplier, which in turn is the case if (ii) it can be codified and (iii) it is not very complex. Often lead firms possess rare capabilities while suppliers further down the chain stand in increasingly fierce competition with each other – leading to large gain capture of developed country lead firms vis-à-vis developing country suppliers.

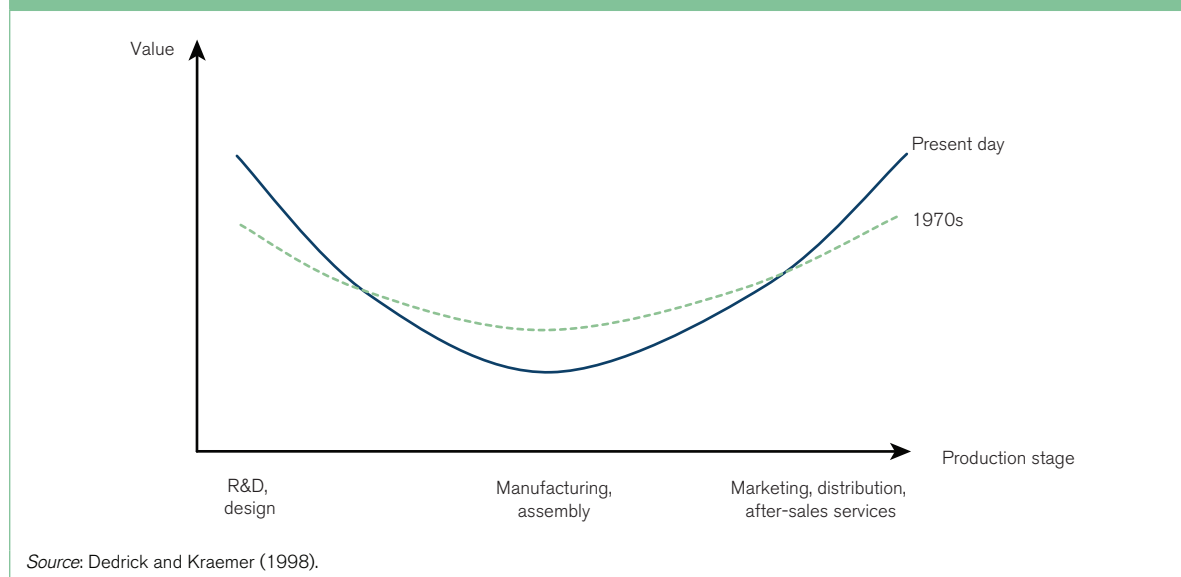
The authors identify five types of GVC structures based on the three factors above (see Table C.5). The first factor is the supplier's capability. If it is low, he will provide a task that can be easily performed by competitors and bargaining power will be heavily skewed in favour of the lead firm. This results in a captive GVC structure, in which developing country firms often find themselves in initial stages of integration. Developing country suppliers could get particularly squeezed if they face high costs of switching to another buyer, so they are effectively locked into dealing with one lead firm in the short run. However, as yet there is little empirical evidence regarding the scale of switching costs and the extent to which they may inhibit suppliers from switching from one buyer to another.

The second fundamental determinant for the remuneration for a task in a GVC is whether the knowledge and specifications needed to undertake the task, even though they may be complex, can be codified and readily transmitted. If this is the case, the remuneration for these activities will generally be low. This is typical in many standard manufacturing and assembly activities, including apparel manufacturing, as described above.³⁷ The ability to codify makes it easier for purchasers to switch between suppliers, thus heightening competition among suppliers and driving down their prices.

On the other hand, if transactions are complex and not easily codified, switching costs are high. Linkages in these chains are therefore tight, and often involve a high proportion of face-to-face interaction and mutual learning, which constitute sunk costs, including for lead firms. Mutual dependence is regulated through reputation and long-term commitments and distribution of gains will be more favourable for the suppliers. To participate in such a "relational" GVC structure, developing country suppliers must possess strong production and communication capabilities, which are typically not present at early stages of GVC integration.

Finally, lead firms' bargaining power is larger if they have few competitors to which suppliers could switch their products. Lee and Gereffi (2013) illustrate this point using the mobile phone global value chain. In recent years, the

Figure C.17: The smile curve



number of lead firms in the sector has shrunk considerably, with Apple and Samsung largely dominating global markets. The authors provide evidence that this consolidation has resulted in increased bargaining power and profits for lead firms, while manufacturing host countries have observed limited wage increases and have become more dependent on the demand from a single lead firm.

The "smile curve" in Figure C.17 describes a general empirical regularity suggesting that upstream activities (R&D, design) and downstream activities (marketing, distribution) are characterized by higher value-added capture.³⁸ In the initial stages of development, countries mostly enter at the low value-added manufacturing and assembly stages, in which knowledge is often easily codifiable and the capabilities required are low. On the other hand, knowledge in other activities, such as design, marketing and retail is not easily codifiable, and brand value and recognition play a large role. These activities are often undertaken directly by the lead firms. As they are hard to replicate, this knowledge and these intangible assets often become the source of a durably strong market position (Palpacuer, 2000; Teece et al., 1997).

While significant welfare gains may be realized because of productivity increases in response to the shift of labour from agriculture to manufacturing and services, as previously described, these gains may not be as large as in the past because the smile curve has "deepened" since the 1970s, meaning lower levels of value added in the middle stages of the value chain. This is due to three reasons (Baldwin, 2012).

The first reason is that tasks are offshored to developing countries precisely because production costs in these countries are low relative to coordination costs. This lowering of costs at that stage necessarily implies that the value added during that stage goes down. The lowering of costs in turn has mainly been driven by many developing countries acquiring during the past decades the capabilities to provide manufacturing and assembly services in many

industries. The second reason is relative market power. The tasks that are easy to offshore are often those that require low capabilities and can be done in various countries and, hence, have become subject to more intense competition as many developing countries have opened up their trade, keeping value added in those stages low. The third reason is internationally mobile technology. The transfer of advanced technology to the offshore locations is now more worthwhile than in the 1970s in light of lower coordination costs. Incorporation of more advanced production technology leads to cost savings and drives down further the value added of the offshored stages.

Existing empirical evidence seems to broadly confirm the distribution of gains in favour of lead firms in GVCs. This evidence generally corroborates that there is lower competition at the stages undertaken directly by global lead firms. For instance, the coffee GVC is important in many developing countries, including landlocked LDCs such as Burundi, Ethiopia, Rwanda and Uganda, accounting for a lion's share of their exports. However, 60 per cent of value added is captured inside the developed country consuming the coffee and accrues to lead firms in roasting and retailing (Fitter and Kaplinsky, 2001).³⁹

Dolan and Humphrey (2010) report that in the UK-Africa horticulture chain particularly, small growers – although just as efficient as large producers – can be marginalized by lead firms' preference for big suppliers in their sourcing strategies. For the apparel GVC, Park et al. (2013) find that, often, less than 10 per cent of value added accrues to developing country manufacturing. Evidence from China's sporting goods sector suggests that lead firms keep their value added capture high by using their influence to control domestic firms' pattern of specialization and upgrading initiatives (Zhou et al., 2009).

In the electronics industry, value capture by lead firms is also relatively high (one-quarter to one-third of products' wholesale prices). In many cases, further significant shares also go to

core software and component suppliers, such as Microsoft and Intel, who own valuable standards, allowing them to charge a considerable price premium (Dedrick et al., 2008). The differences in power underlying this skewed distribution of gains may be aggravated by the lack of appropriate anti-trust regulatory frameworks within many developing countries (Baldwin, 2012; OECD et al., 2013).

(c) Upgrading in GVCs

Uneven distribution of gains in favour of lead firms can to some extent be addressed through efforts by developing countries to “upgrade” or “deepen” their integration in GVCs, although the trade literature does not yet deliver strong conclusions as to whether firm level distributions of gains also apply to the country level. Both upgrading and deepening integration can also often underpin development, but countries that have accomplished both at the same time seem to have fared best in terms of economic growth (see Table C.6).

Upgrading refers to broadening value added performed in a GVC in which integration has already been achieved. It implies climbing up the value ladder (or “smile curve”), moving away from low-skill activities characterized by low entry barriers and high competition. Authors have argued that upgrading within GVCs has been a key factor behind the rapid development of East Asian countries (e.g. Lall, 2001). Deepening integration is often also called intersectoral upgrading. It refers to achieving integration into GVCs in other activities either by establishing backward linkages to other domestic activities or by transferring capabilities to undertake new activities.

Different types of upgrading can be distinguished (Humphrey and Schmitz, 2000). The first is “process upgrading”, referring to improvements in the production process that result in a more efficient transformation of inputs into outputs. It may involve acquiring new machinery, implementing a quality control programme, shortening delivery times or reducing waste. The second is “product upgrading”, consisting of introducing new products, changing designs, improving quality, and producing a more sophisticated final output. The third is “functional upgrading”, involving moving into different

Table C.6: Median GDP per capita growth rate by change in GVC participation and domestic value added provided, 1990–2010

GVC participation growth rate	High	2.2%	3.4%
	Low	0.7%	1.2%
		Low	High
		Growth of the domestic value added share of exports	

Source: UNCTAD (2013a).

stages of production or functions beyond production within a given GVC. Most commonly this implies moving into new activities in a value chain with higher margin and difficult-to-replicate tasks, such as managing complex webs of inputs and outputs, original design, branding and marketing. Intersectoral spillovers across sectors, or deepening of GVC integration, can be distinguished as a fourth type of upgrading. This intersectoral upgrading refers to applying the competences acquired in a particular type of task as a means of integrating into a new sector.

(i) Process and product upgrading

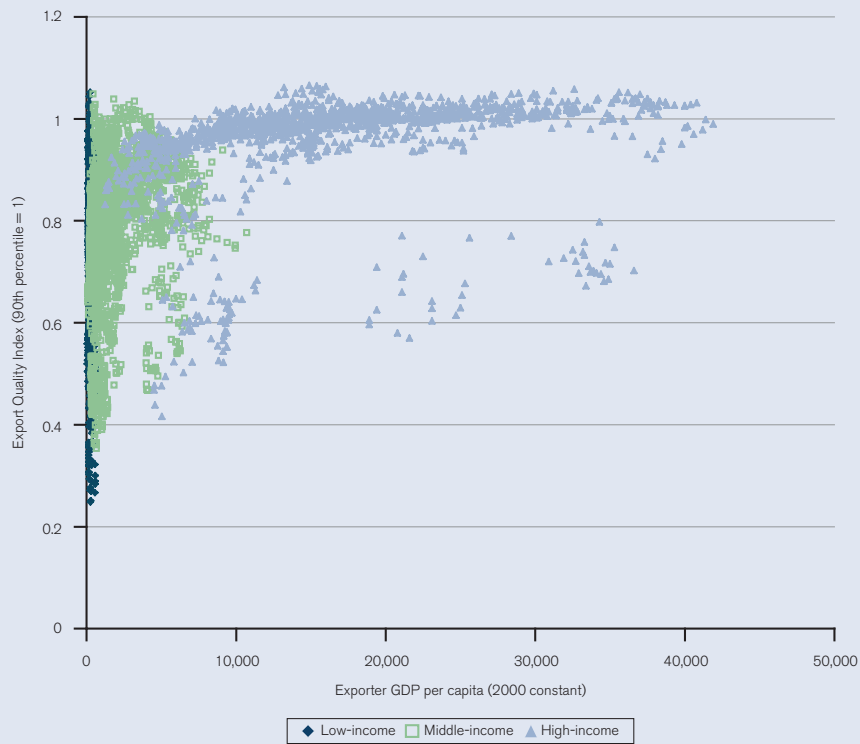
The economic literature suggests that process and product upgrading can lead to considerable productivity gains. Suppliers in GVCs distinguish themselves from other domestic firms partly through this upgrading process. Javorcik and Spatareanu (2009) find that suppliers in GVCs in the Czech Republic are larger, have a higher capital-labour ratio, pay higher wages and exhibit higher productivity. In addition, the literature on export quality suggests that product upgrading is associated with development, particularly in the early stages of development (see Box C.9).

However, gains from process and product upgrading often do not accrue entirely to developing country suppliers or workers. At least some of the gains of such upgrading generally accrue to lead firms because they typically still command large bargaining power at these initial stages of upgrading. Thus, they can squeeze the supplier's higher profit margin, resulting from the upgrading process, and thereby make the manufacturing stage cheaper. In this case,

Box C.9: GVC participation and upgrading export quality

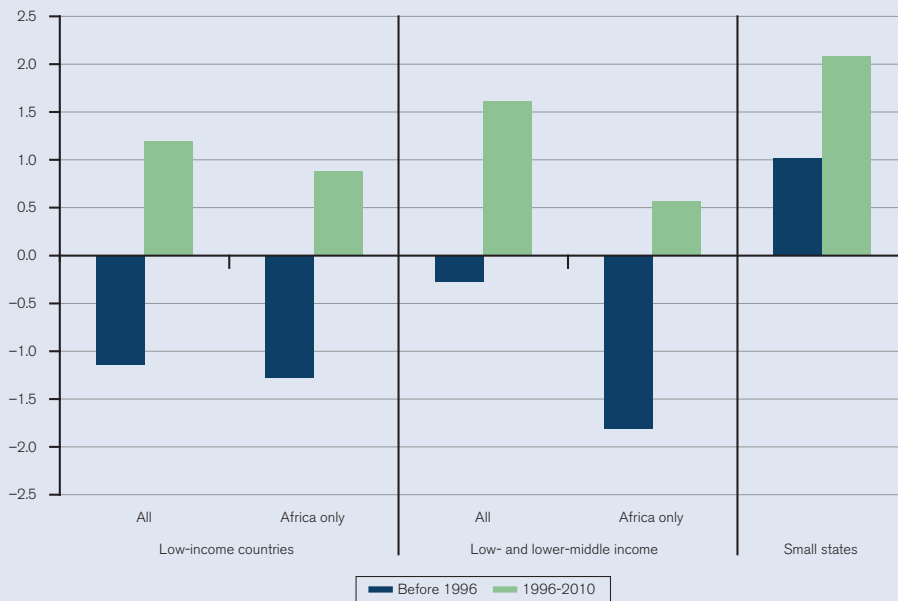
Harding and Javorcik (2012) demonstrate for a large sample of countries that prices of exports (a proxy for export quality) have increased especially strongly in sectors receiving FDI (a proxy for GVC participation). Henn et al. (2013) have devised a database on export quality with comprehensive coverage of developing and low-income countries back to 1962. They report that poor countries may gain considerably from quality upgrading. This form of upgrading in existing export products is strongly associated with development, particularly in the early stages of development (see Figure C.18). Countries complete convergence in export quality to world frontier levels largely by the time they reach upper middle-income status. Quality upgrading opportunities exist in the manufacturing and agricultural sectors although some highly concentrated low-income countries may profit from diversification into new export sectors. Countries with fast export quality convergence over the last two decades have also reaped large growth benefits, registering about 1 percentage point of additional annual growth in GDP per capita (see Figure C.19).

Figure C.18: Export quality and GDP per capita
(Index: 90th percentile = 1)



Source: Adapted from Henn et al. (2013).

Figure C.19: Additional GDP per capita growth in countries with fast quality convergence relative to those with slow convergence during 1996–2010
(percentage points)



Source: Adapted from Henn et al. (2013).

Notes: Additional annual per capita growth in fast quality convergers during 1995–2010 relative to slow convergers (percentage points). Fast quality convergers are those with export quality higher by 0.05 or more during 2008–2010 compared with 1994–1996. Other threshold values for the fast converger cut-off give similar results. Quality values are normalized to 1 at their 90th percentile and then typically range from 0.5 to 1.1.

the developing country supplier may not capture more value added, although it may still keep part of the benefits of the productivity increase. Benefits to the developing country can be larger than those to the supplier if the supplier also serves other parts of the domestic economy, which then benefit from an improved product and/or more competitive pricing.

Process and product upgrading opportunities are intimately linked with the GVC structure. Insertion in a captive GVC has been found to offer particularly favourable conditions for rapid process and product upgrading but often hinders functional upgrading (Humphrey and Schmitz, 2000; Schmitz and Knorringer, 2000). Relational GVCs, in which much interaction is required with purchasers, given that transactions cannot be codified, offer ideal product and process upgrading conditions. However, they are the least likely to occur for developing country producers, partly because in many of the industries that are easy to enter, the knowledge can be codified.

Process and product upgrading conditions also vary by sector. In Latin America, traditional manufacturing and natural resource-based clusters were found to have profited most from this type of upgrading, possibly through higher involvement in collective institutions aimed at raising productivity, such as business associations. However, the impact of upgrading was only moderate in high-cost, engineering-intensive products, such as automobiles and their components, and consumer electronics and collective institutions only played an important role in isolated cases (Giuliani et al., 2005). The authors highlight the key role played by lead firms in most developing countries and sectors in facilitating technology transfer enabling such upgrading.

In some cases, process and product upgrading are achieved with the help of lead firms while in others suppliers themselves are expected to drive these initiatives. Developing country producers can typically learn much from lead firms about how to improve their production processes, attain consistency and high quality, and increase their speed of response to customer orders. This is particularly the case if technology is not locally produced and the quality of products depends on the specialized skills of developed country producers (Giuliani et al., 2005).⁴⁰ In buyer-led chains, the lead firm has an additional important role in transferring information, especially on trends in demand in international markets, along the value chain and in signalling the need and the modes for the necessary upgrading. In certain sectors, such as automobile components and consumer electronics, however, lead firms often do not play a large role themselves in facilitating upgrading (Giuliani et al., 2005) as requirements are often codified by standards. Here, in order to retain the lead firms as buyers, suppliers undertake the upgrading themselves by contracting consultants or turning to other sources of knowledge available in the market.⁴¹

Standards are often used as instruments for achieving process and product upgrading. Often required by lead firms, they can lead to substantial skill development, and

economic and social upgrading by giving access to higher value export markets (Pietrobelli and Rabellotti, 2011). They can, however, represent trade barriers particularly for smaller firms. While compliance costs are typically relatively low (Maskus et al., 2000; 2005), they often tend to eliminate small firms from export markets as the fixed costs of implementing standards can be high relative to their size.⁴² Standards may also serve as catalysts for trade because they can reduce differences in access to information, which may be particularly significant between developed and developing countries. In addition, standards can reduce transaction costs and promote consumer confidence (Maertens and Swinnen, 2014).

Standards set by private firms are often harder to meet than public-sector standards. Both the importance and number of standards that firms need to respect to participate in global trade have also been increasing over time (Fulponi, 2006; Section D). However, a positive point for developing country producers is the trend towards harmonization of standards within sectors, giving producers greater opportunities to supply more than one lead firm. The regions that have integrated most into GVCs over the past 15 years – East Asia and Central and Eastern Europe – have experienced the largest increases in International Organization for Standardization (ISO) certifications, a series of standards aimed at achieving quality assurance for manufacturing and service industries (see Figure C.20).⁴³

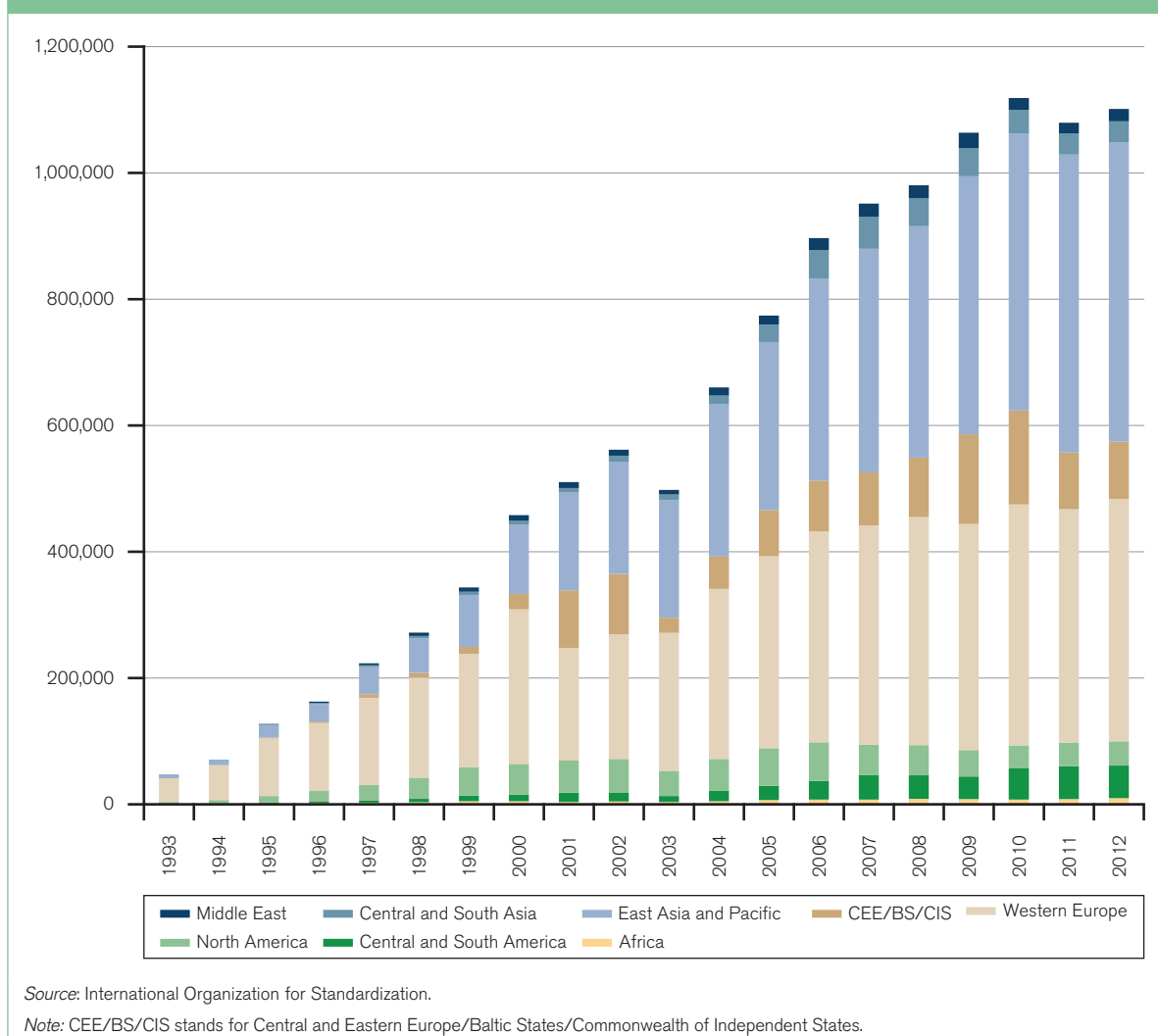
(ii) *Functional upgrading*

Competition from new entrants, particularly firms from other developing countries with lower production costs, is stronger in the manufacturing phases of GVCs than in other more knowledge and organization-intensive activities, such as providing a more complete product, managing part of the value chain, designing products or organizing distribution. Therefore, achieving functional upgrading will normally reduce the amount of competition a firm faces, increase its pricing and market power, and underpin more enduring competitive advantage than process upgrading.

By acquiring new capabilities, the supplier can often shift the structure of the GVC in its favour, e.g. from a captive to a modular relationship, in which the supplier produces a more complete product and manages some backward linkages in the chain (Humphrey and Schmitz, 2002). While functional upgrading has not been shown yet to cause growth, there seems to be an association. The IMF (2013b) finds that exporting more value added, a proxy for functional upgrading, has been associated with higher growth.

Entering GVCs where the developing country supplier is in a particularly weak bargaining position vis-à-vis the lead firm can hinder functional upgrading (Schmitz and Knorringer, 2000; Bair and Gereffi, 2001). To the extent that developing country suppliers initially integrate into these captive relationships, they are dependent on a small

Figure C.20: Stock of ISO 9001 certifications by region, 1993–2012
(number of certifications)



number of powerful customers. Lead firms often impose limitations on suppliers' functional upgrading efforts because they want them to focus their energy on providing the best product and not on other activities. Moreover, high financial risks for suppliers can be associated with functional upgrading ventures, which imply high sunk costs and are not guaranteed to succeed (Navas-Aléman, 2011).⁴⁴ Pressures by lead firms to discourage functional upgrading exist in many sectors but they may be lower in some, such as the software sector (Giuliani et al., 2005).⁴⁵ These pressures are particularly strong when upgrading efforts may threaten the competitive position of the lead firm in its core activities, such as design, marketing and sales (Bazan and Navas-Alemán, 2004).

If functional upgrading does not directly impinge on lead firms' core competences, it can often be achieved, however. Various studies for the garment sector, for instance, suggest that local producers in developing countries will not face too many obstacles when moving from assembly of imported inputs to increased local sourcing and production (Humphrey and Schmitz, 2002).

Apparel manufacturers have achieved upgrading from low value added export-oriented assembly products to export of the ready-to-sell product in various countries, including Mexico and the Asian Tiger economies (see Box C.10).⁴⁶ This type of functional upgrading through vertical linkages is relatively easy in some buyer-led supply chains, in which the lead firms completely focus on design and distribution in their home market and have never been involved in manufacturing. Functional upgrading by suppliers may even be in the interest of these lead firms because they often want to focus more closely on their core competences in design and marketing (Gereffi and Memedovic, 2003).

Further functional upgrading into original brand name manufacturing is typically harder to achieve. This is because through such upgrading, former suppliers often become direct competitors to lead firms, at least in some markets. The economies of clustering help such upgrading: as a country becomes involved in an increasing number of GVCs, the better its support service and infrastructure network become (Wood, 2001). This enables such advanced functional upgrading, which

Box C.10: Functional upgrading in apparel GVCs in East Asia

East Asian newly industrialized economies (NIEs) constitute a prominent example of industrial upgrading in developing countries. They entered apparel value chains in the 1950s, providing purely assembly services in captive relationships. Since then, they have undertaken considerable functional upgrading in three major steps. First, they moved into production of the full product by acquiring capabilities to interpret designs, produce samples, monitor product quality, and meet lead firms' price and time conditions, thereby generating considerable backward linkages in the domestic economy (Gereffi, 1999; Gereffi et al., 2005). This led to development of innovative entrepreneurial capability comprising the coordination of complex production, trade and financial networks. As domestic wages rose with development, these countries in the second major step of functional upgrading became middlemen in GVCs by outsourcing the low value-added manufacturing activity to lower-wage countries in Asia. Firms in the NIEs now moved to focusing on value chain management and coordinating shipments from the low-wage countries directly to destination markets. In adopting this role, the reputation established with buyers through countless successful business transactions during previous years was crucial. In a third step of functional upgrading, East Asian NIEs have also taken up higher-value upstream products (such as exports of textiles and fibres), moved downstream to marketing products under their own brands, and integrated into other GVCs where the success in the apparel sector can be replicated.

tends to take place at later stages of development. For instance, some firms in the East Asian NIEs – after having first become competent manufacturing bases for developed country leaders – have pressed ahead to integrate their manufacturing expertise with the design and sale of their own branded goods. The Republic of Korea is one of the most advanced, with its many widely recognized brands, including automobiles (Hyundai) and electronic products and appliances (Samsung), sold in many developed economy markets. Firms based in Chinese Taipei have pursued original brand name manufacturing in computers, bicycles, sporting equipment and shoes (Gereffi, 2001).

Functional upgrading into activities that are core competences of lead firms, such as design or branding, can be facilitated in three ways. First, serving smaller domestic customers in addition to multinational lead firms typically leads to suppliers attaining functional upgrading (Navas-Aléman, 2011). In Brazil, retailers purchase ready-designed shoes to sell them in the domestic market either under their own labels or under the supplier's own brand (Schmitz, 2004). Similarly, knitwear firms in India sell to small foreign traders and also develop their own products (Tewari, 1999).

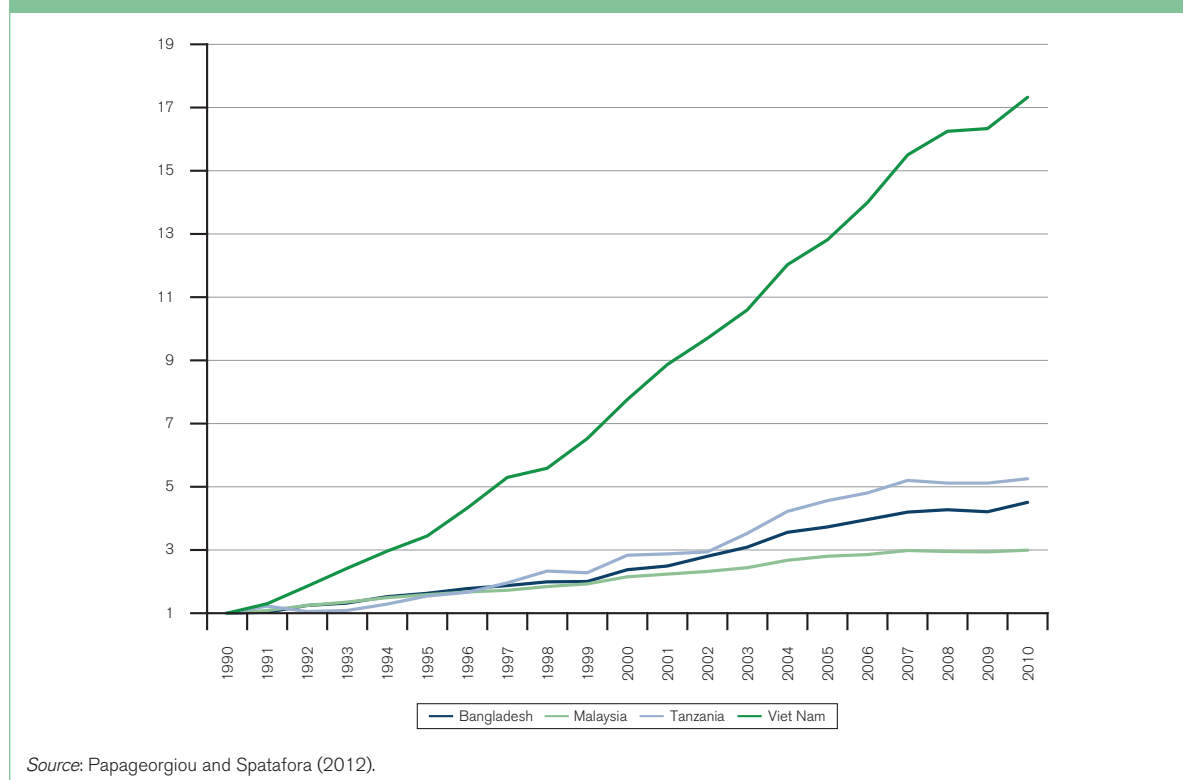
Secondly, being active simultaneously in various chains can foster functional upgrading. This exposes firms to different value chain structures that stimulate different types of upgrading. It can have a significant impact when there is a deliberate intent to apply newly acquired capabilities from more captive chains to more flexible ones, such as market-based relationships. Navas-Aleman (2011) have found that multi-chain producers show the best levels of attainment in all three types of upgrading: product, process and functional upgrading. Giuliani et al. (2005) find many instances of multi-chain clusters in their large study of 40 Latin American industry clusters.

Thirdly, being active in chains at the domestic, regional and global levels is favourable for functional upgrading. Such diversified activity has been observed for firms in various industries.⁴⁷ In particular, functional upgrading into design and marketing may be more easily attainable initially in the local market. Even being based in a small country may not place unsurmountable obstacles if firms manage to take advantage of internal and neighbouring markets, as highlighted by Reardon and Berdegúe (2002) for the Central American agro-industrial sector. For countries weakly integrated into world markets and characterized by many small-scale producers, regional integration may be an intermediate step in attaining internationally acceptable productivity and quality levels (Draper et al., 2013).

Collective institutions and joint actions among firms in clusters are important for fostering functional upgrading. Clusters can help firms, particularly smaller ones, overcome major constraints and encourage division and specialization of labour by providing a wide network of suppliers, agents who sell to distant markets, specialized producer services, and a pool of specialized and skilled workers (Giuliani et al., 2005). Collective institutions are important for supporting the development of clusters. These institutions include business associations, joint marketing, trade fair participation, integration of research and technology diffusion centres, and collaboration with universities.⁴⁸ Importantly for developing countries at initial stages of development, collective action can also be successful among small firms and in the agricultural sector.⁴⁹

Raising education levels is likely to be important in unlocking upgrading potential, as pointed out by Draper et al. (2013), who advocate such horizontal policies rather than a focus on specific activities. They emphasize that education constitutes a crucial determinant of the position into which a country can insert itself in a value

Figure C.21: Growth in varieties of products exported in 1990–2010
(index 1990=1)



chain, and is increasingly valued by investors vis-à-vis low labour costs.

(iii) Intersectoral upgrading

Intersectoral upgrading, or deepening of integration across sectors, refers to the ability to establish vertical backward linkages or transfer capabilities to new products and activities.

Backward linkages

Vertical backward linkages refer to the integration of local suppliers into production processes of domestic GVC firms. Successful establishment of vertical linkages can then also help these suppliers benefit from knowledge and technology spillovers. Javorcik and Spatareanu (2008) find that FDI affiliates with joint domestic and foreign ownership face lower costs in identifying local suppliers. This highlights that the process of identifying suppliers involves specific local knowledge that may not be easily available to wholly foreign-owned firms. The results suggest that, to the extent that such information is made available, e.g. through business associations or specific government agencies, it could facilitate local firms' integration into supply chains.⁵⁰

New products and activities

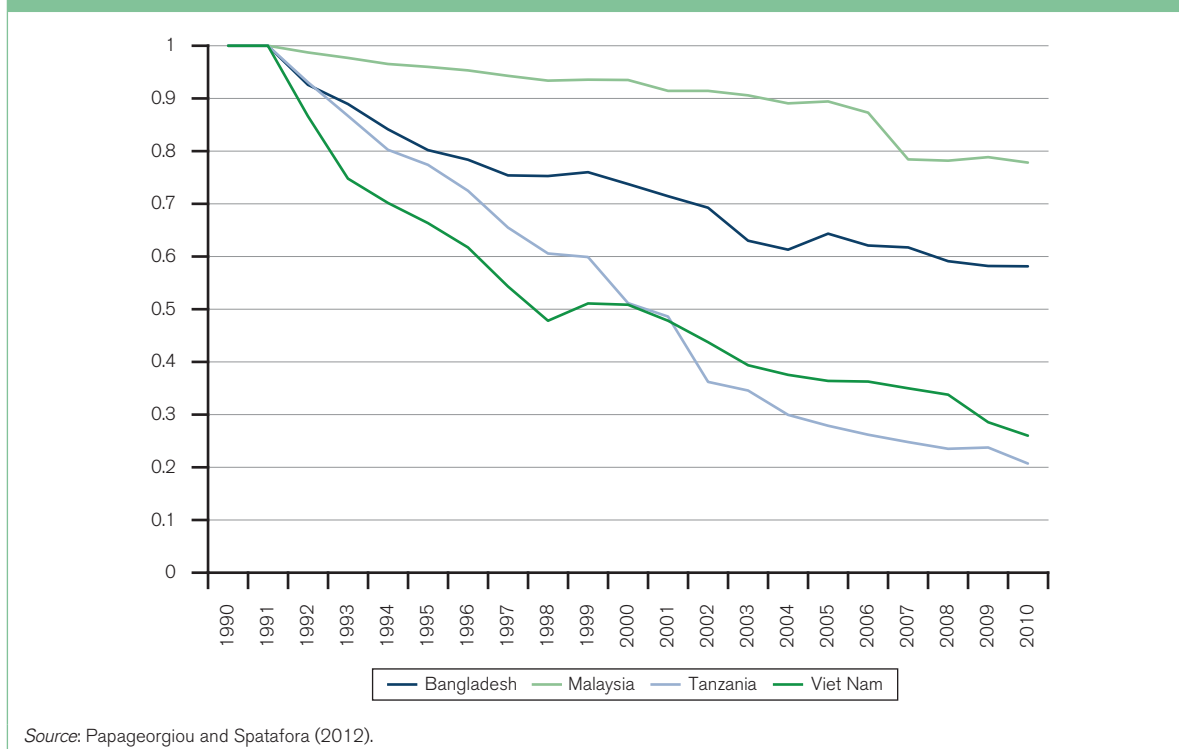
An example for successful intersectoral upgrading into new products and activities is manufacturers in Chinese Taipei, who built on their skills in producing TVs by first

making monitors, and then moving into the computer sector (Guerrieri and Pietrobelli, 2004; Humphrey and Schmitz, 2002). Costa Rica's diversification from medical devices into computer chips (see Box C.6) can also be seen as a case of intersectoral upgrading.

It is, however, not straightforward to identify those products and activities that will be competitive. Finding them is largely a trial-and-error process and requires experimentation, but can lead to durable competitive advantage.⁵¹ Papageorgiou and Spatafora (2012) illustrate that some fast-growing low-income countries, such as Viet Nam, feature high experimentation. For instance, Viet Nam nowadays exports 18 times as many different products as it did in 1990 (see Figure C.21). Experimentation is an important way for a country to discover those products that can be particularly successful exports, which Easterly et al. (2009) call "big hits". The authors find that many countries' export baskets become dominated by just a few "big hits". To cultivate a "big hit", it is also important that export growth can be sustained after the discovery phase; the data show that Tanzania has been particularly successful in this respect (see Figure C.22).

Sutton and Kellow's (2010) results suggest that those persons and organizations most successful in discovering export opportunities are aware of both international demand and local capabilities. The authors find that many large enterprises in African countries are owned either by foreign companies or locals previously involved in the import-export

Figure C.22: Export value of 1990 incumbent varieties of products, 1990–2010
(index 1990=1)



business. Papageorgiou and Spatafora (2012) suggest that experimentation and subsequent export growth may be encouraged by low set-up costs for firms, strong linkages between industry and universities, and low barriers for entry into new markets and for exporting.

3. Risks related to GVC participation

There are various risks relating to GVC participation. While spillover benefits through integration and upgrading in GVCs can be important, these risks also need to be appropriately taken into account. This section highlights six types of such risks. GVC participation can heighten vulnerabilities to demand fluctuations resulting from global business cycles and to supply fluctuations caused by disruptions in supply, and by relocation and investment risks. Further risks relate to labour and the environment, adverse effects on income inequality inside countries, and narrow learning.

(a) Increased vulnerability to global business cycles

Participation in GVCs can increase vulnerability to global business cycles. Altomonte et al. (2012) show that during the great trade collapse of late 2008, GVC trade fell faster and further – but also recovered faster – than non-GVC trade in detailed data on French trading firms, for which these two types of flows can be distinguished (see Figure C.23). The authors attribute this to more synchronized

information sharing within GVCs, which allows more immediate stock adjustments in response to shocks and causes impacts to be rapidly transmitted upstream through GVCs.⁵² Yet, the study also shows that supplier relationships are generally long lasting in GVCs and were not destroyed by the economic crisis.

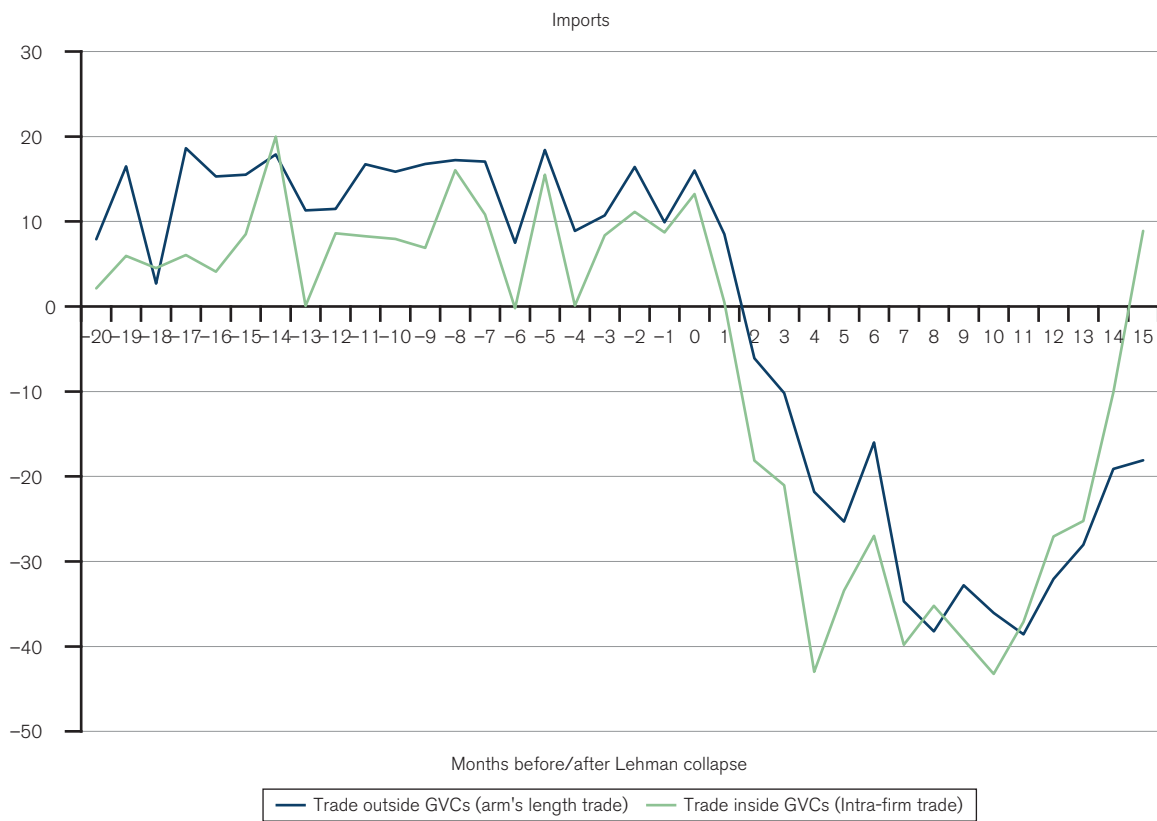
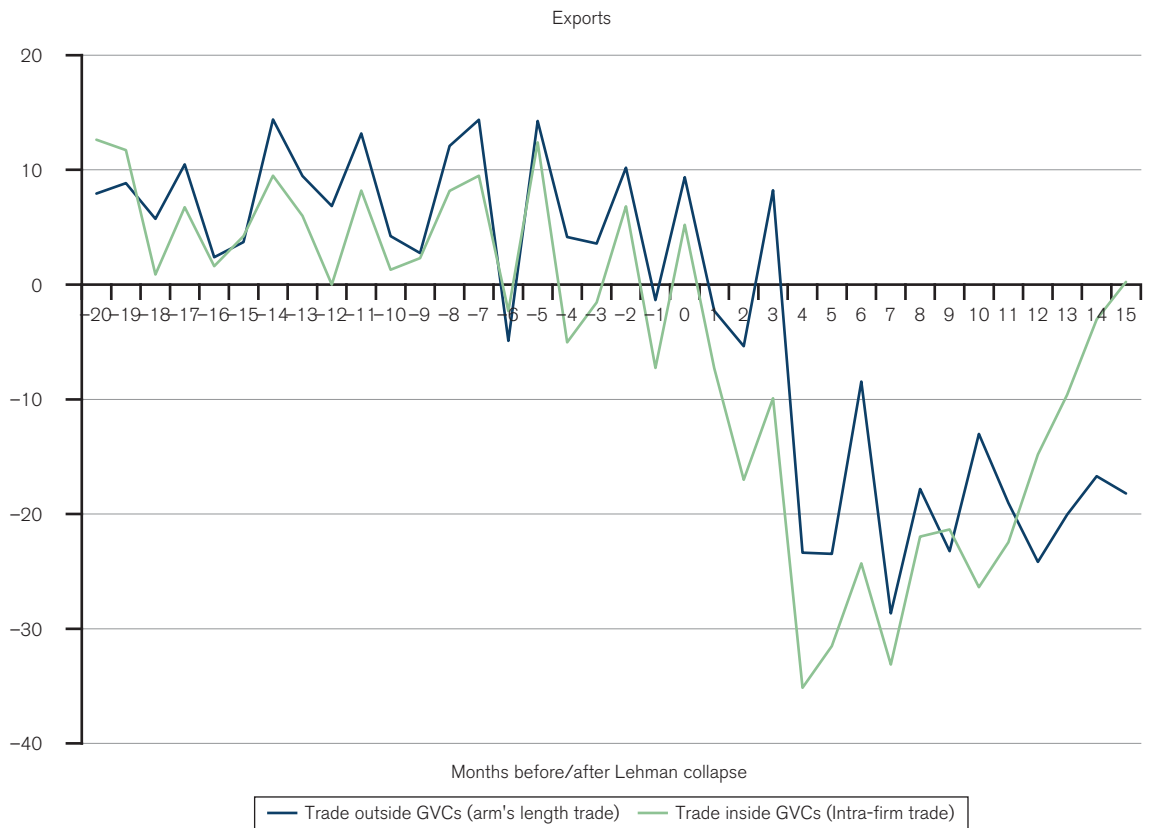
Nonetheless, adjustments to persistently lower demand can be painful for developing countries. For instance, the clothing industry slashed over 11 million jobs in the year and a half following the global crisis, with China, India and Pakistan most affected (Staritz, 2011).⁵³ In addition, developing countries may be more exposed to idiosyncratic shocks at the level of individual lead firms because these often pass on uncertainty to smaller sub-contractors and their workforces (Arnold and Shih, 2010).

Ivarsson and Alvstam (2010) suggest that participation in multiple types of supply chains can be helpful in mitigating exposure to global business cycles. By having their own brand, marketing strategy and design, multi-chain firms can more easily switch between domestic and regional markets for the sale of products.

(b) Increased vulnerability to supply disruptions

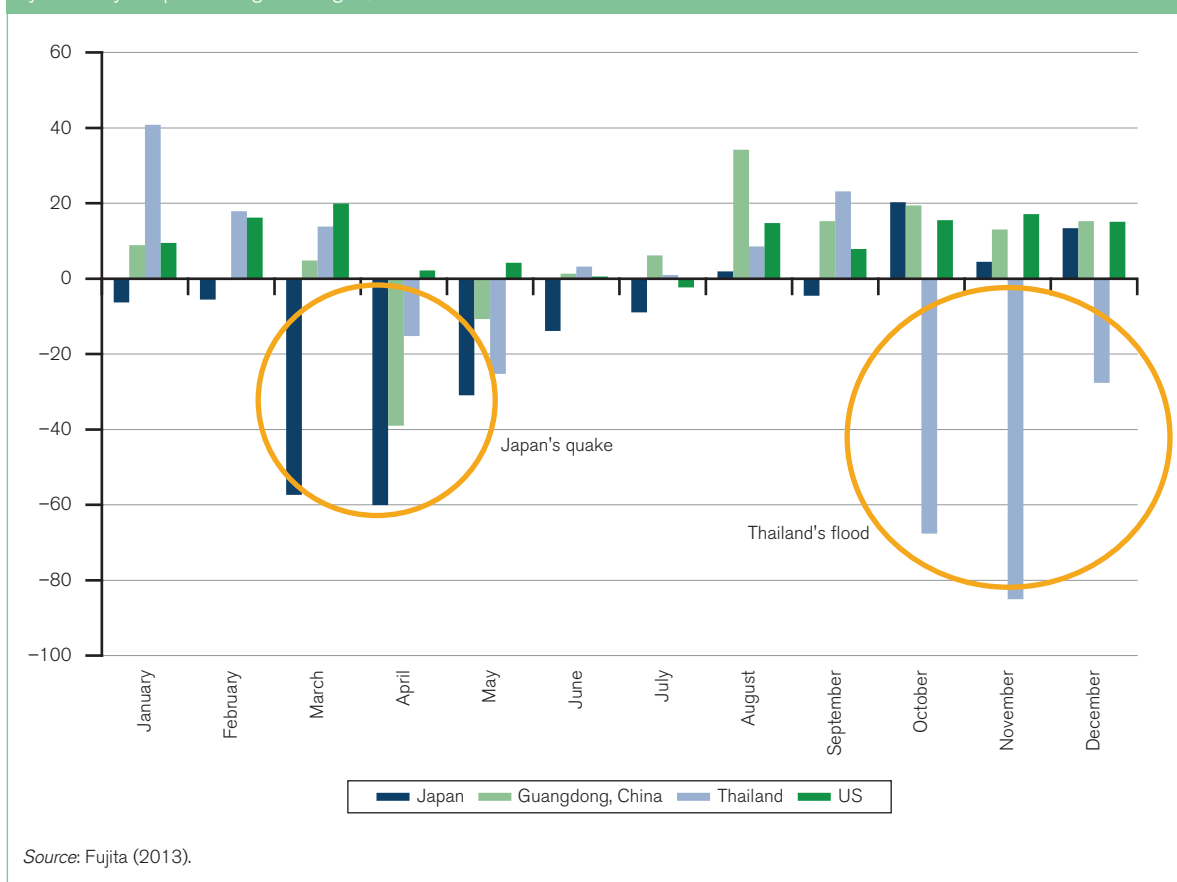
Isolated events, such as natural disasters, can create large disruptions in GVCs. The disruptions can be particularly large if: (i) production is very concentrated geographically,

Figure C.23: Trade of French firms within and outside GVCs during the Great Trade Collapse of late 2008 (year-on-year percentage changes; Month 0 = September 2008)



Source: Altomonte et al. (2012).

Figure C.24: Automobile production in selected regions, 2011
(year-on-year percentage changes)



with a certain component produced only in one or a few places worldwide; (ii) if the final product consists of many components; and (iii) if a supply shock arises upstream rather than downstream.⁵⁴ The devastating 2011 Tohoku earthquake in Japan illustrated this, as production of a key car component was concentrated in the region most affected by the disaster. Although Japanese overall trade was not hugely affected (Escala et al., 2011), Japanese auto production fell by as much as the decline in parts production in the disaster area, given its reliance on the component. Furthermore, there were international ripple effects in other automobile manufacturing areas, including in China, Thailand and Japan (see Figure C.24). However, the impact of floods in Thailand later the same year was more contained, affecting mainly domestic production with less knock-on effects to other economies, arguably because Thai car manufacturing is more downstream (Fujita, 2013).

(c) Relocation and investment risks

In GVCs, specialization of suppliers is intensified, competitive advantage becomes more dynamic and knowledge has to be acquired continuously for suppliers to safeguard competitive positions (Cattaneo et al., 2013). Location decisions in GVCs are characterized by

a trade-off between production costs and the transaction costs of unbundling. Indeed, certain components may be produced in a country with a production cost disadvantage to save on unbundling costs (Baldwin and Venables, 2013).

Even small changes in production or unbundling costs may be sufficient, therefore, to affect the location decision of firms. If transaction costs increase or production costs in developing countries rise relative to those in advanced countries, firms might decide to bring back part of the production that has been previously offshored. Likewise, if relative production costs change between different developing countries, production may relocate between them. It is therefore not surprising that vertical FDI, which is particularly important in GVCs, has been found to be more mobile than horizontal FDI (Olney, 2013). Adverse impacts may also materialize even if firms do not completely pull out of the domestic economy but only shift orders to different production plants or suppliers in other countries (Plank and Staritz, 2013).

This high mobility of GVCs results in relocation and investment risks for those countries that have achieved integration, particularly if their capabilities are relatively ubiquitous (Draper et al., 2013). These risks can materialize in manifold ways. Policy makers may be unaware of when

thresholds for relocation are reached and may be surprised by sudden shifts in production, leaving the country unprepared in the face of significant structural adjustment needs and social dislocation.⁵⁵ Public investments in infrastructure, education and other resources have often been made (or are being undertaken) based on the country's economic structure, if not specifically to attract lead firms and foster integration into GVCs. These public investments can then quickly become badly spent resources. Private investments may also be at risk. Local suppliers can face strong decreases in downstream demand if key partners relocate to a distant destination. To the extent that the domestic banking system has extended significant credit to such suppliers, these exposures may be in jeopardy and can deteriorate banks' solvency, curtailing their ability to fund other investments in the economy.

Governments incur fiscal and relocation risks as they take decisions on which types of FDI to attract. In seeking to attract FDI, often considerable resources are committed through various instruments – explicitly as investment subsidies or tax breaks or implicitly as commitments for infrastructure development, regulatory reform, labour market liberalization or port authority changes (Blanchard, 2014). The likelihood of relocation for different types of investment therefore constitutes an important part of cost-benefit analyses undertaken by governments in attracting investments.⁵⁶ There is also a risk that governments could be drawn into a “race to the bottom” against their peers in offering concessions which could unduly constrain future policy making through grandfathering rules or compensation clauses for foreign investors (Hoekman and Newfarmer, 2005).

(d) Risks relating to labour and the environment

Developed country lead firms often require adherence to social, labour and environmental aspects of process standards, such as ISO certification, from their developing country suppliers. While these standards generally represent improvements over national norms, these improvements have reportedly been uneven across GVCs with regards to working conditions and labour rights (Locke et al., 2009). The collapse of the Rana Plaza garment factory in Bangladesh, from which a series of lead firms procured products, has increased public interest in the issue of worker safety, and raises concerns that there may indeed be a risk of a “race to the bottom” among developing countries to secure foreign contracts and investment.

Differing responses among lead firms seem to confirm that the extent of public scrutiny in their home markets is an important driver in directing corporations' resources towards labour issues. However, even if resources are deployed, lead firms face various challenges in improving labour standards in their developing country suppliers.

First, they may not have perfect control over suppliers. At present, requirements are often neither contractual nor subject to verification (Jorgensen and Knudsen, 2006). When verification occurs, lead firms' monitoring mechanisms are often based on inspections, where a mentoring approach to help local suppliers adopt standards might be more successful (Locke et al., 2009). Finally, sustainability standards could be evaded by suppliers by outsourcing tasks further down the chain to second- and third-tier suppliers (Jorgensen and Knudsen, 2006).

Nonetheless, government and non-governmental agencies concerned with raising labour and environmental standards have recognized that lead firms can provide a leverage point for their aims. However, a key blockage remains, in that standards are not equivalent across lead firms or sectors. For example, no common approach for factory inspections has yet emerged among global buyers in the wake of the Rana Plaza tragedy. Thus, convergence in standards involves multi-stakeholder initiatives consisting of diverse public and private, local and global agents. Even when such multi-stakeholder initiatives come to fruition, effective monitoring can be difficult and standards remain at risk of being undermined by stray cases of non-compliance.

Environmental outcomes have been relatively positive when narrowly comparing GVC integration with more traditional types of industrialization.⁵⁷ Available evidence focuses on the impact of FDI – a reasonable proxy for GVC presence – on environmental variables. Tambunlertchai et al. (2013) find for Thailand that FDI, particularly when originating from OECD countries, typically plays a positive role in the adoption of environmental standards. The authors also show that emission reductions are concentrated in those firms that face low implementation costs, have more understanding of procedures to meet standards and greater access to necessary technology. Case evidence from China pinpoints that emissions by firms financed by foreign capital are lower than those by domestically financed firms, at least for some types of pollution (Yang et al., 2013).

(e) Risks relating to income inequality within countries

Across countries, global integration during the last two decades has had a positive impact on reducing global income equality (Section B). However, power asymmetries inside GVCs can lead to unequal distribution of gains across firms and potentially also countries.

Within countries, GVCs are often associated with differing impacts on employment and inequality. Trends toward higher within-country inequality materialized in both developed and developing countries around the same time as the rise of GVCs, although it remains unclear whether it was globalization that drove this widening in income distribution within countries.⁵⁸ For developed countries,

offshoring can be associated with large transfers of some types of jobs to developing countries (Feenstra, 1998), thus affecting employment and income distribution in developed countries (OECD, 2011).

For developing countries, rapid growth through GVC participation causes them to face simultaneously the problems of the developed and developing world in a wide range of social and economic issues, including rapid industrialization and de-industrialization in different sectors, and simultaneous incidences of malnutrition and obesity, as well as simultaneous requirements for basic literacy and world-class tertiary education (Sturgeon and Memedovic, 2010). These impacts operate mainly through two channels: by affecting relative wages and by increasing profit shares.

Feenstra and Hanson (1996) develop a theoretical argument of this link between offshoring and inequality through wage differences between high- and low-skill workers.⁵⁹ Developed countries are assumed to be abundant in high-skill workers and scarce in low-skill workers while the reverse is assumed for developing countries. Producers in developed countries will offshore the low-skill tasks when the wage differential becomes large enough to compensate for increased coordination costs (Baldwin and Venables, 2013). If that happens, the developed country experiences an increase in the complexity of the tasks performed and, hence, the demand for high-skill workers goes up, resulting in a wage gap increase between the high- and low-skill workers. Assuming the offshored tasks are considered high-skill in the developing country (given lower overall levels of human capital), a similar effect will be observed there. Thus, in both countries the wage gap increases between high- and low-skill workers.

Whether the absolute wages of the low-skill workers increase or fall depends on the terms-of-trade change in the model outlined above, and can go either way. Low-skill workers' wages would increase as a result of gains in productivity through outsourcing tasks, but only if there is perfect competition among firms, as Grossman and Rossi-Hansberg's (2008) alternative model suggests. However, offshoring firms are often large firms operating in imperfect competition, as this section has highlighted, so a positive impact on low-skill wages cannot be assured.

The impact of international offshoring on rising wage gaps is confirmed by empirical studies. Feenstra and Hanson (1996; 1997) present evidence both for developed and developing countries. The authors show that higher offshoring in US industries from 1979 to 1992 was associated with a rising share of wages of high-skill workers. At the same time, a similar pattern was observed in Mexico: the wages of non-production workers increased relative to production workers. Analysis of Mexican plants owned by US firms close to the border suggests that this increase was indeed driven by offshoring as the sharpest

increases in wage inequality were observed in the states that hosted many such plants.

Results from Swedish and Japanese multinationals indicate that the impact of offshoring on the domestic skill intensity depends negatively on the income level of the host country. Therefore, vertical FDI, particularly in low-income countries, appears to lead to skill upgrading at home – and higher wages (Head and Ries, 2002). This increase in wage differentials between skilled and unskilled workers could be offset if, simultaneously, the supply of skilled workers expanded sufficiently; however, this does not seem to be the case in practice.⁶⁰

Profits and consolidation of firms constitute the second channel through which income inequality within countries tends to increase. International competition leads to increasing consolidation and firm sizes by creating higher returns to scale. Iacovone et al. (2013) find that Chinese competition in the US market especially drove small Mexican firms out of the market. However, large Mexican firms were unaffected. As large firms are typically more productive, this may have positive welfare effects overall but to the extent that small firms are owned by poorer individuals, there are adverse income distribution effects. Moreover, the share of profits in total income has risen in most countries during the last two decades, while the share of wages has declined. Given that profits increasingly accrue to large firms, which are mostly owned by relatively wealthy individuals, income inequality has increased further (Rodriguez and Jayadev, 2010).

Finally, there is inconclusive empirical evidence on whether FDI may be a factor in increasing the profit and wage gaps. Jaumotte et al. (2013) find evidence of inequality being driven by technological progress and, to a lesser extent, financial openness, the latter mainly felt through FDI.⁶¹ Both of these appear to increase the premium on higher skills and possibly higher returns to capital. Meanwhile, trade openness is not found to have a negative impact on income inequality.⁶² Some earlier studies generally corroborate this result (Tsai, 1995; Alderson and Nielsen, 1999; Choi, 2006). Other research expresses concerns that FDI inflows into developing countries might have a negative impact on the development of local firms, and gains in labour demand may be limited because FDI often uses labour-saving technologies (Park et al., 2013). In contrast, other studies cannot find any impact by FDI on income distribution (Milanovic, 2002; Sylwester, 2005; Adams, 2008). Adams (2008) finds instead that other globalization proxies (trade openness and intellectual property rights) may be associated with higher income inequality, but they also can only explain 15 per cent of inequality patterns.⁶³

The literature suggests that adverse developments in income and wealth distribution could be mitigated through various channels. Redistribution within countries and internationally is one of these channels. Ostry et al. (2014) analyse historical data on redistributive policies

and show that resulting higher equality also boosted growth subsequently. Fitter and Kaplinsky (2001) point out that, until the late 1990s in Europe, the distribution of consumption standards had not become markedly more unequal, despite a worsening pattern in income distribution. However, in retrospect this may also have led to macroeconomic imbalances partly underlying the 2008 crisis, highlighting that such redistribution must be carefully designed, including to avoid persistent balance of payments imbalances (see Section E).

Once initial GVC integration has been achieved, international aid initiatives and transfers may be focused more strongly towards building skills and empowering local workers and producers which may enhance their bargaining power vis-à-vis lead firms (Mayer and Milberg, 2013). Bernhardt and Milberg (2012) show that when social upgrading in GVCs (proxied by increasing employment and real wages) occurs, it is generally underpinned by economic upgrading (proxied by rising export market shares and export prices). However, economic upgrading does not guarantee social upgrading.

(f) Narrow learning

Some types of participation in global value chains may lead to a narrow type of learning. This can occur when the skills involved in the activities performed in GVCs can neither be usefully transferred to other activities nor used to upgrade within the same value chain (Kawakami and Sturgeon, 2011; OECD et al., 2013). Davis (2010) argues that narrow learning can make the economy dependent with regard to a few tasks, which may not lead to the creation of sufficiently large economies of scale. Although many firms manage to upgrade in GVCs, much product and process upgrading takes place in the lower remunerated sphere of manufacturing, and survey evidence pinpoints that some firms do not achieve substantial upgrading. Thus, joining a GVC does not constitute a guarantee for future upgrading (Navas-Aléman, 2011).⁶⁴

A related issue arises if new knowledge is not widely dispersed throughout the economy. This may happen, for instance, when lead firms are not interested in integrating new local suppliers, which has been reported in some cases. Hungary's government programmes to integrate small and medium-sized enterprises (SMEs) into the country's electronics GVCs were not very successful, reportedly, despite the active participation of SMEs in the programmes and the parallel improvement of their capabilities (Plank and Staritz, 2011). The underlying reason may be that lead firms prefer to keep their supply base organizationally and geographically concentrated, with the result that room for potential local suppliers can be limited, regardless of their capabilities. Spillovers through human capital can be also limited when it is not attractive for local managers of lead firm affiliates to switch to domestically-owned firms (Plank and Staritz, 2013).

4. Policies affecting GVCs

Country-specific determinants, such as those related to the domestic business environment, are important in reducing trade costs, especially in the context of GVCs (see Section C.4.a). Moreover, keeping tariff barriers and other traditional trade barriers low is very important in a world in which inputs cross borders several times (see Section C.4.b). Finally, the patterns of GVCs have been accompanied by a deeper integration through trade agreements that go beyond these traditional instruments (see Section C.4.c).

(a) Setting the right framework for GVC participation

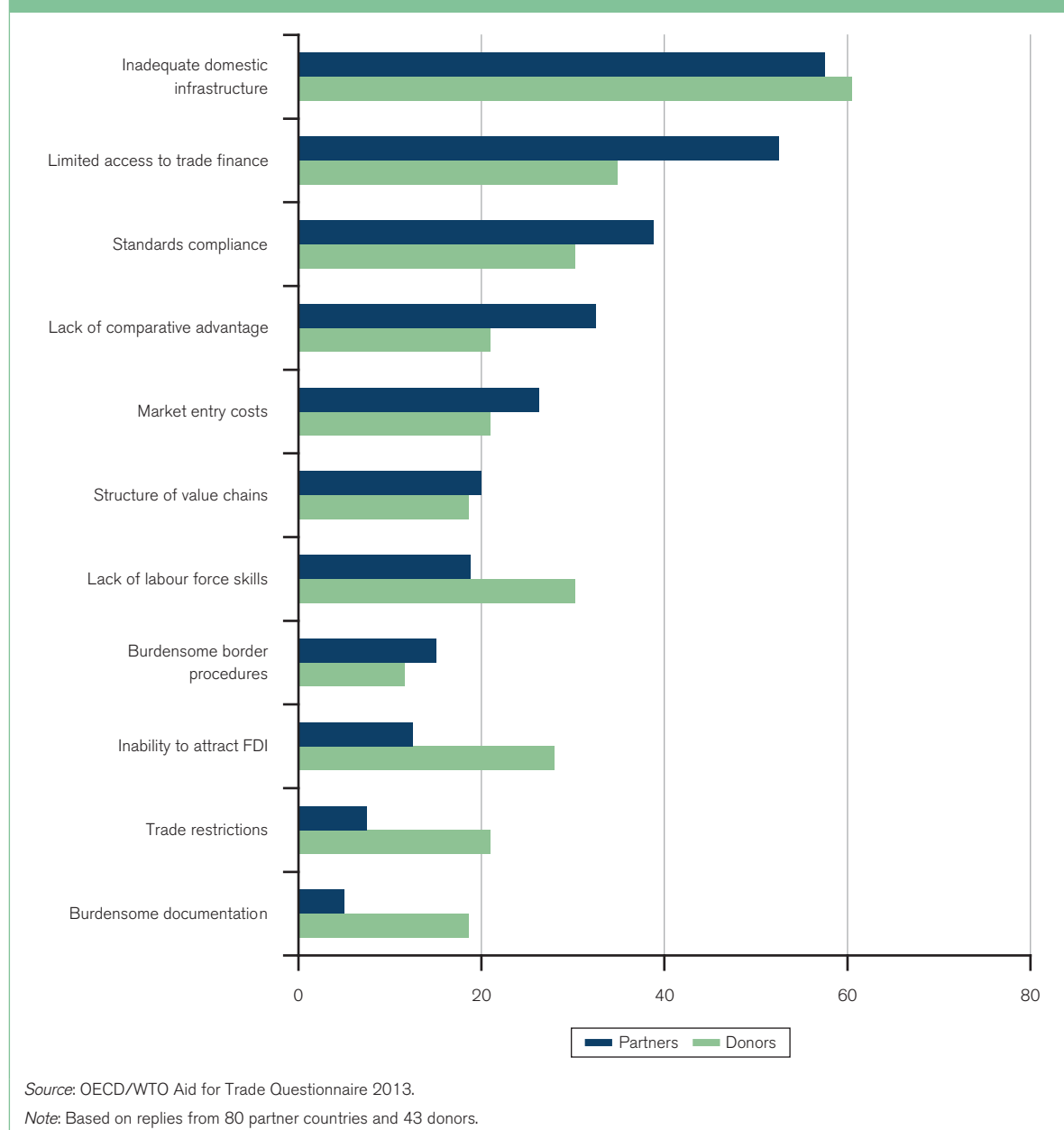
As part of the Fourth Global Review of Aid for Trade in July 2013, the WTO and the OECD conducted a joint monitoring exercise to identify the main barriers that developing country firms face in seeking to participate in value chains and how the Aid for Trade initiative can help firms overcome these barriers. Surveys were filled in by both the public and private sectors. From the public sector, 52 donors and 80 partner countries, including 36 LDCs, participated. From the private sector, 697 firms, including 524 developing country suppliers and 173 lead firms, responded. These firms are engaged in five value chains: agrifood, information and communications technology (ICT), textiles and apparel, tourism, and transport and logistics.

Partner countries and providers of trade-related assistance highlight three main barriers for developing country firms seeking to participate in value chains (see Figure C.25): inadequate infrastructure, limited access to trade finance, and standards compliance. Besides transport and ICT infrastructure, unreliable supplies of electricity still constitute a major constraint for firms in developing countries, and in LDCs in particular. Access to trade finance is a particular problem for small exporters.⁶⁵

Finally, firms have to demonstrate compliance, often through certification, with a range of standards, including technical, health and safety requirements, in order to be able to access mature markets and participate in value chains. WTO (2013a) presents a dedicated analysis of the effects of non-tariff measures on the exports of small economies. It shows that small, vulnerable economies (SVEs) are particularly affected by such non-tariff measures, as they specialize in products such as vegetables and food products that are significantly exposed to sanitary and phytosanitary (SPS) measures, and often lack the facilities to conduct testing and certification procedures that are required to meet standards and technical regulations in export markets.

Based on the replies of developing country suppliers and lead firms, Table C.7 shows the main barriers that

Figure C.25: Partner and donor country views on main barriers to firms entering value chains, 2013
(per cent)



developing country firms perceive as hindering their participation in value chains. Both suppliers and lead firms regard transportation costs and delays as well as customs procedures as major trade-related difficulties. These two issues seem to be of higher relevance than import duties and licensing requirements, which remain significant barriers nevertheless.

Suppliers and lead firms highlight the same four supply-side constraints: the regulatory environment, the business environment, transport infrastructure and labour skills. Furthermore, in line with the views of the public sector, developing country suppliers and lead firms regard access to finance, and in particular

trade finance, as well as an inadequate infrastructure for standards as significant supply-side constraints in developing countries.

The presence of these obstacles might matter more for supply chain participation than for final goods trade. When different components of a good are produced in different locations, uncertainty as to the arrival time or the quality level of a certain component might disrupt the overall supply chain.⁶⁶ Studies such as Nordås et al. (2006) and Hummels and Schaur (2013) suggest that costs associated with burdensome border procedures and a longer time to export are particularly relevant for time-sensitive sectors such as intermediate goods.

Table C.7: Main barriers hindering developing countries' participation in value chains, 2013
(per cent)

Developing country suppliers		Lead firms	
<i>Difficulties connecting developing country suppliers to value chains</i>		<i>Difficulties connecting developing country suppliers to value chains</i>	
Transportation costs and delays	42%	Customs procedures	52%
Access to trade finance	40%	Transportation costs and delays	38%
Customs procedures	36%	Licensing requirements (domestic or trade)	33%
Import duties	23%	Import duties	33%
Supply chain governance	23%	Meeting volume requirements	22%
<i>Supply side constraints</i>		<i>Obstacles to establish commercial presence</i>	
Access to finance	48%	Business environment	50%
Labour skills	39%	Regulatory transparency	48%
Business environment	38%	Inadequate standards infrastructure	38%
Regulatory transparency	30%	Transport infrastructure	33%
Transport infrastructure	29%	Labour skills	30%

Source: OECD/WTO Aid for Trade Questionnaire 2013.

Note: Shares are calculated based on the sectors for which the respective issue could be selected as an answer, e.g. import duties could not be selected by tourism and transport and logistics firms.

Table C.8 illustrates some of the supply chain determinants for countries with high and low levels of participation in GVCs.⁶⁷ The table suggests that GVC costs are negatively correlated with GVC participation. Specifically, the quality of transportation and communication infrastructure is lower in countries with low rates of GVC participation. On the other hand, the quality of the institutions, and in particular of the legal systems, is higher in countries with high levels of participation in GVCs. Also, procedures required to start up a business as well as waiting times at the border are longer in countries with low GVC participation rates.⁶⁸ Finally, countries with high levels of supply chain participation show slightly higher levels of IP protection compared with countries with low levels of GVC participation.

Policies targeting new sources of comparative advantage are fundamental to increasing the opportunities for developing countries to join GVCs, and can be achieved, for instance, through capital investments in infrastructure, such as transportation or telecommunications, or increased efficiency of institutions. The availability of a trained workforce often determines in which GVCs – and, in turn, in which tasks therein – developing countries are able to participate.⁶⁹

The WTO's Aid for Trade initiative (see Box C.11) can be used to address some of the obstacles to developing country firms' participation in value chains. It can be used to support transport infrastructure development, to fund trade facilitation, or to improve national or regional initiatives aimed at helping firms meet technical regulations and standards in export markets.

Trade facilitation helps reduce trading times and improve the predictability of trade, which have been found to

be significant determinants of trade in general, and of trade in time-sensitive goods and within value chains in particular (Djankov et al., 2010; Hummels and Schaur, 2013; Gamberoni et al., 2010). Moisé and Sorescu (2013) estimate that the trade cost reduction due to the implementation of trade facilitation can be as high as 15 per cent.⁷⁰

The new Trade Facilitation Agreement signed at the Ninth WTO Ministerial Conference will play an important role (see Box C.12). It should help reduce trading times, improve the predictability of trade and thereby boost trade, in particular within value chains. In the short run, the challenge will be to ensure a speedy and effective implementation of the Agreement. As the Agreement states that the extent and the timing of implementing the provisions will be related to the implementation capacities of developing and least-developed country members, this will involve securing enough assistance and support to help developing and least-developed country members implement the provisions of this agreement, in accordance with their nature and scope.

Moreover, in the context of the Aid for Trade initiative, Aid for Trade facilitation is an area of particular importance to supply chains as both developing country suppliers and lead firms perceive customs procedures as major obstacles to the participation of developing country firms in value chains.

Existing empirical studies point to a negative relationship between Aid for Trade facilitation and the cost of trading. Calí and te Velde (2011) find that Aid for Trade facilitation, in contrast to aid to transport infrastructures, significantly reduces the monetary cost to import or export a container and the number of days it takes to

Table C.8: Cross-country comparison of some determinants of GVC participation costs

	Parts and components		Trade in value added	
	Low participation	High participation	Low participation	High participation
Quality of transport infrastructures				
Quality of port infrastructure, index from 1 to 7 (2011)	4.1	4.6	4.6	5.1
Quality of communication infrastructures				
Mobile cellular subscriptions, per 100 people (2011)	89.5	112.5	113.1	131.9
Telephone lines, per 100 people (2011)	17.1	24.8	33.8	32.0
Internet users, per 100 people (2011)	34.0	49.0	57.3	68.1
Quality of institution for doing business				
Time to enforce a contract, days (2012)	621.5	561.0	577.3	465.9
Procedures to enforce a contract, number (2012)	37.8	35.9	36.0	31.4
Cost to enforce a contract, % of claims (2012)	35.5	29.3	31.6	20.8
Rule of law, index between -2.5 and 2.5 (2012)	-0.1	0.3	0.7	1.0
Time-related barriers				
Time to start a business, days (2012)	31.3	22.1	26.5	14.2
Documents to export, number (2011)	6.7	5.8	5.3	4.8
Documents to import, number (2011)	7.5	6.8	5.7	5.7
Time to export, days (2011)	22.1	17.8	12.9	11.8
Time to import, days (2011)	24.3	19.8	14.4	12.1
Quality of IP protection				
Index of patent rights, index from 0 to 5 (2005)	3.2	3.7	4.2	4.1
Trade facilitation				
Trade facilitation indicator, index from 0 to 2 (2009)	1.2	1.4	1.4	1.4

Source: Author's calculations based on World Bank Doing Business Database (2012), Worldwide Governance Indicators Database (2012), World Development Indicators (2011), Park (2008), OECD Trade Facilitation Indicators.

Note: In the first two columns, economies are split into high and low participation using the share of imports in parts and components on total manufacturing trade in 2011. Economies with a share higher (lower) than the sample median are classified as having high (low) participation. In the last two columns economies are split according to the participation index in 2008 based on TiVA dataset. Economies with a share higher (lower) than the sample median are classified as high (low) participation. The low-participation economies according to TiVA are: Argentina, Australia, Brazil, Brunei Darussalam, Cambodia, Canada, China, Denmark, France, Germany, Greece, India, Indonesia, Israel, Italy, Japan, Mexico, New Zealand, Poland, Romania, the Kingdom of Saudi Arabia, South Africa, Spain, Switzerland, Turkey, the United Kingdom, and the United States. The high-participation economies according to TiVA are: Austria, Belgium, Bulgaria, Chile, Czech Republic, Estonia, Finland, Hong Kong (China), Hungary, Ireland, Republic of Korea, Latvia, Lithuania, Luxembourg, Malaysia, the Netherlands, Norway, the Philippines, Portugal, the Russian Federation, Singapore, the Slovak Republic, Slovenia, Sweden, Chinese Taipei, Thailand and Viet Nam.

Box C.11: Aid for Trade initiative and Aid for Trade flows

The Aid for Trade initiative was launched at the WTO's Ministerial Conference in Hong Kong in 2005. It aims to increase the awareness of governments regarding the importance of trade for development and to mobilize resources to address the trade-related supply-side constraints of developing countries. Aid for Trade is a sub-set of Official Development Assistance (ODA), covering four broad support categories: trade policy and regulations; economic infrastructure, i.e. transport, energy and telecommunications; productive capacity-building, i.e. sectoral support; and trade-related adjustment.

Aid for Trade commitments amounted to US\$ 53.8 billion in 2012, accounting for almost 40 per cent of total ODA, and have increased by 109 per cent compared with the 2002-05 baseline average.⁷¹ SVEs and LDCs have received commitments of US\$ 2.5 billion and US\$ 13.1 billion in 2012, respectively. For LDCs, amongst other countries, Aid for Trade represents a significant source of development finance and an important complement to the US\$ 24 billion FDI inflows in 2012.

According to existing cross-country analyses, Aid for Trade is positively correlated with trade expansion and reductions in trade costs.⁷² In many instances, empirical studies find that the impact of Aid for Trade on trade costs or trade performance depends on the purpose of aid, i.e. aid targeted at infrastructure, trade policy or sectors, or on the geography and income level of the recipient country. Evidence regarding the effectiveness of Aid for Trade in stimulating value chains trade is limited. However, available research (OECD and WTO, 2013a) suggests that Aid for Trade is positively associated with increased developing country exports of parts and components.

Box C.12: Trade Facilitation Agreement

At the Bali Ministerial Conference in December 2013, after more than nine years of negotiations, WTO members reached consensus on a Trade Facilitation Agreement. Its objective is to “clarify and improve relevant aspects of Articles V, VIII and X of the GATT 1994 with a view to further expediting the movement, release and clearance of goods, including goods in transit”. Recognizing “the particular needs of developing and especially least-developed country Members” it also aims to enhance assistance and support for capacity building in this area.

The Agreement contains 13 articles and a special section dealing with special and differential treatment provisions. Among the issues addressed in the Agreement are:

- norms for the publication of laws, regulations and procedures, including Internet publication
- provision for advance rulings
- disciplines on fees and charges and on penalties
- pre-arrival processing of goods
- use of electronic payment
- guarantees to allow rapid release of goods
- use of “authorized operators” schemes
- procedures for expediting shipments
- faster release of perishable goods
- reduced documents and formalities with common customs standards
- promotion of the use of a single window⁷³
- uniformity in border procedures
- temporary admission of goods
- simplified transit procedures
- provisions for customs cooperation and coordination.

The Agreement also calls for the establishment of a Preparatory Committee on Trade Facilitation under the General Council, open to all WTO members, to perform such functions as may be necessary to ensure the expeditious entry into force of the Agreement and to prepare for the efficient operation of the Agreement upon its entry into force.

In particular, the Preparatory Committee will conduct the legal review of the Agreement, receive notifications of commitments from members, and draw up a Protocol of Amendment to insert the Agreement into Annex 1A of the WTO Agreement.

import a container. In particular, they find that an increase in Aid for Trade of US\$ 390,000 is associated with a decrease of US\$ 82 in the cost of importing a container. Considering the very high number of containers crossing the borders of developing countries, the return on increases in Aid for Trade facilitation is substantial. Similarly, Busse et al. (2012) find that the overall Aid for Trade policy, and in particular Aid for Trade facilitation, significantly reduce the cost of trading. Furthermore, Helble et al. (2012) find a positive relationship between Aid for Trade facilitation and the trade performance of countries.

Case studies provide another source of evidence regarding the effectiveness of Aid for Trade facilitation. The Third Global Review of Aid for Trade in 2011 gathered 269 case stories, 62 of which relate to trade facilitation (OECD and WTO, 2013b). While 14 case stories describe hard infrastructure investments, 48 address “soft” infrastructure issues, such as trade policy, customs regulations, border crossings and the

business environment. These case stories highlight several key factors for the success of a project, i.e. ownership and political commitment by the recipient country, strong involvement of local stakeholders, in particular the private sector, and efficient coordination among donors and recipients. Box C.13 describes one Aid for Trade facilitation case story in Central America.

(b) Tariffs in GVCs

In the presence of global supply chains, where intermediate inputs cross borders several times, the impact of trade barriers is magnified. The effect of a marginal increase in trade costs is much higher compared with its effect when there is a single international transaction (Blanchard, 2014).⁷⁴ As Baldwin (2012) suggests, this explains why many developing economies have unilaterally liberalized tariffs and embraced pro-business and pro-investor policies after the second unbundling.

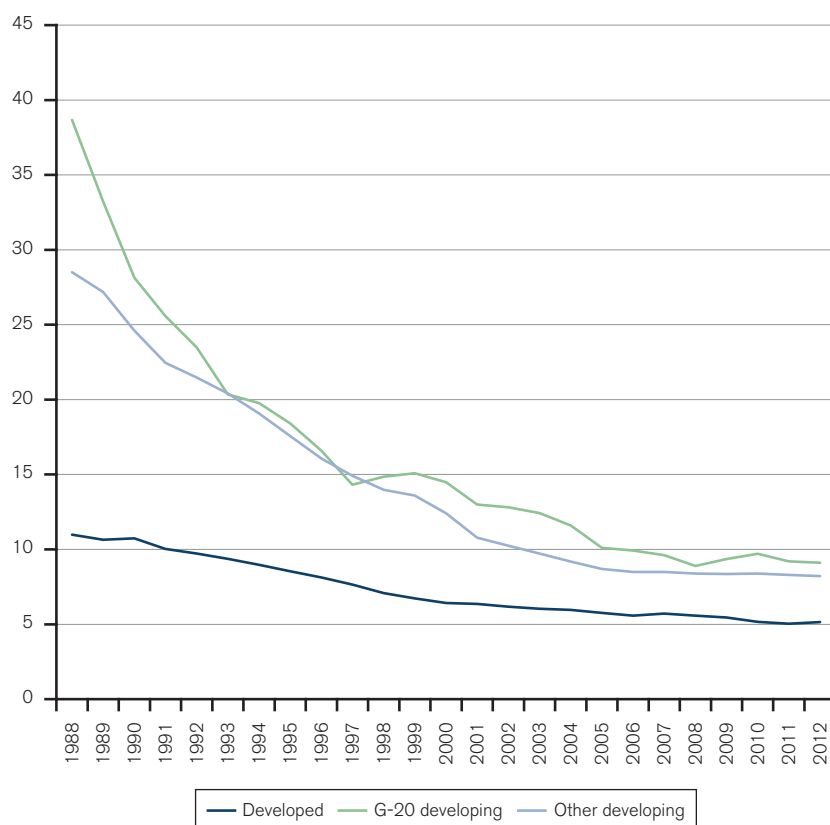
Box C.13: Case study – international transit of goods (TIM) in Central America

To reduce border crossing waiting times and the complexity of customs procedures, the Inter-American Development Bank (IDB) designed and implemented the US\$ 2 million International Transit of Goods project (or TIM, its Spanish acronym), an electronic system for managing the flow of goods in transit.⁷⁵ In 2008, TIM was implemented as a pilot project in El Amatillo, the border crossing between El Salvador and Honduras with the highest volume of trade-related transactions in Central America.

TIM has considerably improved the border clearance for these goods by harmonizing procedures and consolidating information and certification into a single electronic document. The border-crossing time for goods at El Amatillo was reduced from an average of 62 to eight minutes, and the volume of paperwork was decreased. Political support, consensus among stakeholders, close coordination on the ground and technical expertise were the main factors for success and helped overcome resistance regarding organizational and infrastructural change.

Given the success of the project, the second phase has seen the extension of TIM to seven countries (Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua and Panama) along the Pacific Corridor. While TIM has been implemented at some borders, others are still in a process of putting it into action. The next step consists of extending TIM to all borders (land and maritime) and airports in the region.

Figure C.26: Most-favoured nation (MFN) tariffs on parts and components by country group (per cent)



Note: Underlying data are simple averages of ad valorem rates.

Source: Calculations based on the TRAINS (Trade Analysis and Information System) database, WITS (World Integrated Trade Solution).

(i) Tariff opening

Figure C.26 shows that average tariffs applied on intermediate goods have been decreasing over time, reaching an average value of around 5 per

cent and 8 per cent, respectively, in developed and developing countries in 2012. Developing countries have significantly decreased their tariffs on parts and components over time. This pattern confirms the fact that better access to international markets is as

important as access to their own markets for developing countries aiming to participate in GVCs.

The pattern of reducing tariffs on parts and components in G-20 developing economies such as China, which is highly involved in GVCs, is particularly interesting. In the mid-1990s, China was already participating in supply chain activities but had high tariffs for parts and components (about 25 per cent on average). Before its accession to the WTO in 2001, China had gradually reduced tariffs to about 18 per cent on average by 2000 and continued to reduce them to 11 per cent by 2003. A similar pattern of gradual trade opening in intermediate goods is observed for India, which decreased its tariffs from more than 30 per cent in 2000 to around 9 per cent in 2009. The Republic of Korea started its trade opening much earlier and already by the mid-1990s had reduced its tariffs to around 9 per cent.

(ii) *Tariff escalation and GVCs*

Tariff escalation is a form of protectionism whereby tariffs tend to rise as the stage of processing advances. In other words, tariffs on primary resources and intermediate goods are lower than tariffs applied to final products.⁷⁶ Tariff escalation is often used by resource-poor countries in order to have better access to natural

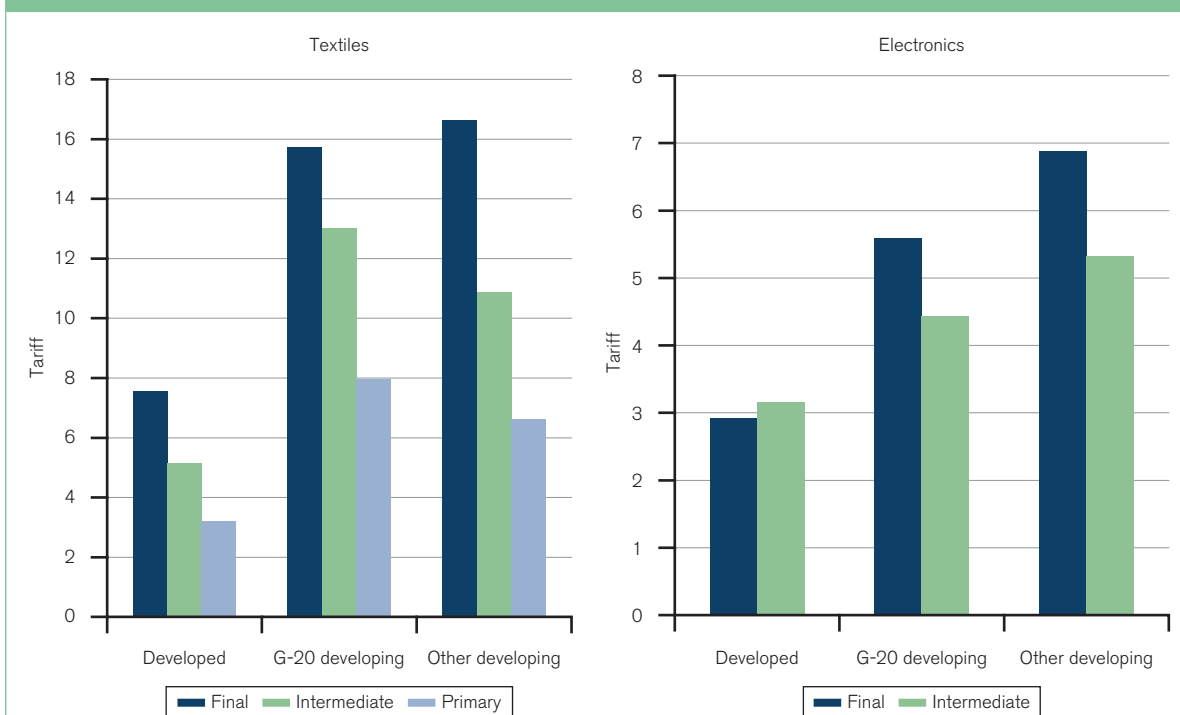
and primary resources and to provide an advantage to domestic firms engaged in higher value-added stages of production rather than in the provision of low value-added intermediate products.⁷⁷

Tariff escalation can lead to a form of competition between countries that might hinder the potential of upgrading along the supply chain. The protection guaranteed by high tariffs on a final good in a large market affects the relative prices of intermediate and final goods. The comparative advantage structure is thus distorted and GVC upgrading becomes more difficult for countries specialized in low value-added stages.

Although tariff escalation is usually considered a phenomenon typical of the agriculture and natural resources sectors (see Section D.3), it is also present in manufacturing value chains. Figure C.27 illustrates the existence of tariff escalation in two sectors in which GVCs are particularly prevalent, electronics and textiles.⁷⁸ This shows that, in general, the levels of tariffs applied to primary inputs or intermediate products are lower compared with tariffs applied to the final product.

Figure C.27 also illustrates that tariff escalation is not only undertaken by developed economies but is also present in G-20 developing countries and other developing

Figure C.27: Simple average tariff on primary, intermediate and final electronic and textile products by country group, 2011 (per cent)



Source: Calculations based on TRAINS dataset.

Note: In order to reduce the number of missing values in the dataset, missing data have been interpolated.

economies. In 2011, for example, the average tariff on imports of final electronic goods was almost 26 per cent higher than the tariff imposed on intermediates by G-20 developing countries.

(c) Deep integration and GVCs

The changing nature of trade, from trade in final goods to trade in intermediate goods, is related to the growing demand for deeper agreements that can address new cross-border effects.⁷⁹ The increase in trade flows, involving the exchange of customized inputs across multiple locations, incomplete contracts and costs associated with the search for suitable foreign input suppliers, creates new forms of cross-border policy effects, and therefore highlights the importance of services measures together with other non-tariff measures having an impact on different nodes and dimensions of a GVC.

The proliferation of preferential trade arrangements (PTAs) captures, to some extent, this increasing demand for

deeper integration (Baldwin, 2011a; WTO, 2011). Trade agreements no longer simply involve tariff reduction, but increasingly cover disciplines related to behind-the-border measures. In particular, provisions related to competition policy, investment, standards and intellectual property rights are present in more than 40 per cent of agreements⁸⁰ active in 2012 (see Table C.9).

Orefice and Rocha (2013) formally investigate the two-way relationship between deep integration and GVCs. The authors find that the greater the depth of an agreement, the bigger the increase in trade in intermediate goods among member countries. On the other hand, higher levels of trade in production networks increase the likelihood of signing deeper agreements containing provisions of regulatory nature such as intellectual property rights and movement of capital.

Provisions such as investment and IPRs in PTAs encourage more FDI flows and production sharing by protecting firm-specific assets such as human capital (management or technical experts) and intellectual property (patents or blueprints).⁸¹ In addition, the vertical

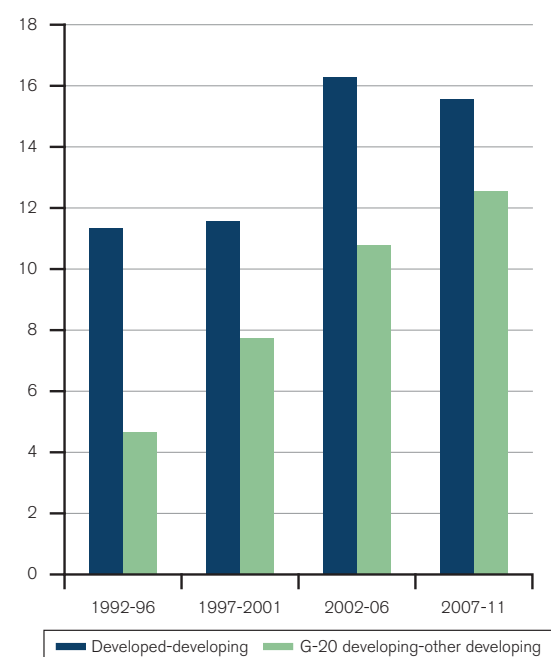
Table C.9: Share of agreements covering non-tariff disciplines in 2012 (per cent)

Provision	Share of agreements	Provision	Share of agreements
Customs	88	Financial assistance	7
Export taxes	64	Consumer protection	6
Movement of capital	57	Data protection	5
General Agreement on Trade in Services (GATS)	54	Education and training	5
State aid	52	Illegal immigration	4
State trading enterprises	47	Industrial cooperation	4
Intellectual property rights	46	Information society	4
Investment	42	Small and medium-sized enterprises	4
Technical barriers to trade	41	Regional cooperation	3
Competition policy	40	Statistics	3
Public procurement	37	Cultural cooperation	2
Sanitary and phytosanitary measures	30	Economic policy dialogue	2
Visas and asylum	18	Taxation	2
Labour market regulation	17	Audiovisual	1
Environmental laws	16	Civil protection	1
Social matters	12	Innovation policies	1
Energy	8	Health	1
Research and technology	8	Mining	1
Anti-corruption	7	Public administration	1
Agriculture	7	Terrorism	1
Approximation of legislation	7		

Source: Authors' calculations on WTO PTA content dataset.

Note: The shares are calculated over 100 agreements, which is the total number of agreements mapped in the PTA content dataset.

Figure C.28: Average number of provisions by country group and period, 1992–2011 (number of PTAs)



Source: WTO Secretariat.

Note: Developed-developing includes 42 agreements between developed countries and all developing countries excluding LDCs. G-20 developing countries-other developing includes 25 agreements between G-20 developing economies and other developing countries excluding LDCs. Each bar represents the average number of provisions included in the agreements signed in each time period.

integration of production through FDIs may be enhanced by the presence of provisions such as SPS measures, technical barriers to trade (TBTs), and customs.⁸² Such provisions, in fact, foster the reduction of contractual uncertainty, either through a harmonization of differences in contractual institutions, or by providing an enforcement mechanism and a commitment device to countries with weaker institutions.⁸³

The increased servicification of GVCs⁸⁴ highlights the strategic role that the opening of trade in services can play in determining the extent to which a country might participate in global value chains. Data show that WTO members that are more involved in GVCs have higher levels of GATS commitments and services offers in the Doha Development Agenda.⁸⁵

The increasing role of South-South supply chains presented in Section C.1(a) poses the question of whether and how agreements between developing countries participating in GVCs have evolved over time. A clear upward trend in the average depth of agreements signed between G-20 developing economies and other developing economies, compared with “old” developed-developing agreements, is highlighted in Figure C.28.

Figure C.29 shows the evolution of agreements between G-20 developing countries and other developing countries for a selected number of provisions. An increase in harmonization of policies between G-20 developing countries and other developing countries is evident. In particular, a high share of PTAs now includes SPS measures and TBTs. Similarly, disciplines on services, investment, competition policy and IPRs have been adopted by an increasing share of agreements over time.

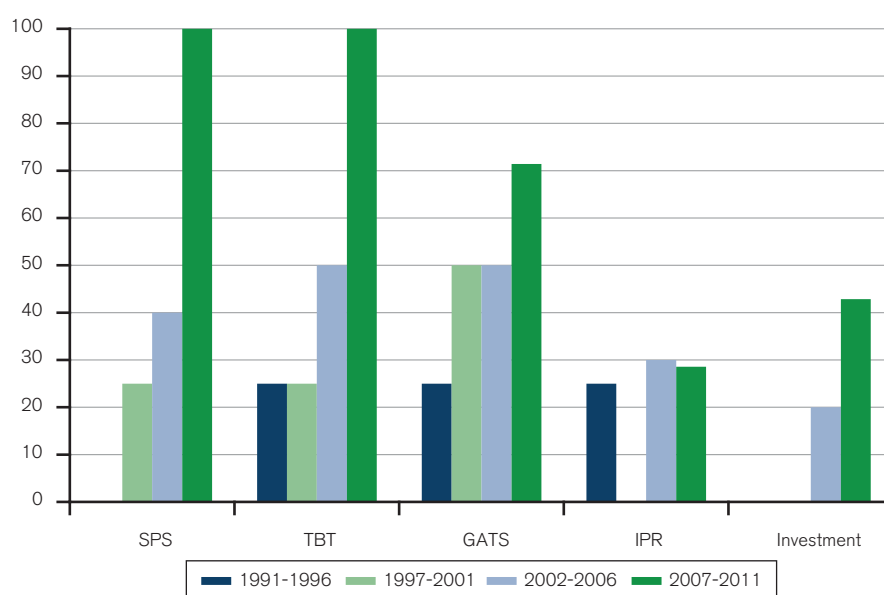
5. Conclusions

Global value chains and the international outsourcing of tasks are not a completely new phenomenon, but have shifted into high gear with the trade opening of G-20 developing countries. What is new is their increasing scale and scope, involving a complex organization of inputs, in terms of both goods and services, from many countries. Developing countries are playing a more important role in value chains, in terms of their participation as well as in the nature of activities performed within these chains. In 2008, the highest levels of supply chain participation were held by developing countries. Developing economies are also, increasingly, recipients and sources of FDI – a fundamental channel for building global supply chains and integrating into them. Also, South-South activity in GVCs has significantly increased: the share of trade in parts and components between developing countries has risen from around 6 per cent in 1988 to almost 25 per cent in 2013. Finally, more than 30 per cent of developing countries' exports consist of services value added, with services having become an important input into manufactured goods. This underlines the important role of services for GVC efficiency and development.

There is some evidence that successful integration and upgrading in GVCs can underpin development success, with data showing that countries that participate more in GVCs are richer, and that those that integrate more rapidly grow faster. However, gains are not automatic, and economic upgrading may not translate into social upgrading. In addition, more research is needed on the strength of links between GVC participation and development. To judge the impact of GVCs on many developing economies, including LDCs and SVEs, value-added trade statistics will need to be devised to cover these countries. The GVC literature is evolving and still suffers from some shortcomings – for instance, it is not clear whether documented firm level impacts also apply to the country level.

Inward FDI and other GVC-based interactions with foreign firms can be important to help countries achieve spillovers of new technology and knowledge, and building local capabilities to operationalize them is crucial. Initial integration into GVCs can lead to substantial growth benefits in poor countries as labour

Figure C.29: Share of G-20 developing countries-other developing countries agreements including selected provisions, 1991–2011 (per cent)



Source: WTO Secretariat.

Note: The numbers represent the shares of agreements signed in a particular time-period between G-20 developing countries and other developing countries that include a particular provision. There are 25 agreements involving both G-20 developing countries and other developing countries.

is moved from low-productivity subsistence agriculture to higher-productivity manufacturing or services. However, integration is normally achieved at the low skill stages of GVCs – e.g. in assembly. Competition among developing countries is often fierce in these activities, and therefore these countries' capture of value added is initially low. While upgrading to more sophisticated activities in GVCs may be a way to underpin growth at middle-income status and beyond, it can be harder to achieve, partly because lead firms may resist such upgrading on behalf of suppliers, especially if it impinges on their core competences.

GVC participation also holds risks. It exposes countries more strongly to global business cycles and to supply disruptions in far-away locations if these produce crucial inputs into production. The fact that it is possible to integrate into a GVC with a relatively narrow set of skills implies that competitive advantage becomes more fleeting and that the risks of industries relocating are higher. Competition to attract new investments exposes countries to a potential race-to-the bottom on domestic regulation. Finally, GVCs may increase income inequality as high-skill individuals' relative remuneration tends to rise and the share of profit in output increases relative to that of labour.

Countries that have a more favourable domestic business environment have been found to be more

integrated into global value chains. Trade policy also plays a role in facilitating supply chain participation. Obstacles to GVC integration include infrastructure and customs barriers. Trade facilitation addresses these obstacles and helps to reduce trading times and improve the predictability of trade, which have been found to be significant determinants of trade in general and within value chains in particular. When production is fragmented, the impact of trade costs is magnified. On average, countries have significantly decreased their tariffs on intermediate goods over time, but variation among countries is high.

The proliferation of PTAs captures, to some extent, the increasing demand for deeper integration that can address new cross-border effects due to the changing nature of trade. In fact, these preferential trade agreements increasingly cover disciplines related to behind-the-border measures. In particular, provisions related to competition policy, investment, standards and intellectual property rights are present in more than 40 per cent of agreements in force in 2012. Countries with higher GVC participation have also made deeper commitments under the WTO's General Agreement on Trade in Services (GATS). However, to the extent that the issues that PTAs attempt to address are global in nature, they will eventually emerge as issues at the multilateral level. The challenge for governments will be to ensure complementarity between regional and multilateral disciplines.

Endnotes

- 1 In the trade literature, this phenomenon is referred to as "global supply chains", "global value chains", "international production networks", "vertical specialization", "offshore outsourcing" and "production fragmentation".
- 2 Similarly, a country that exports a lot of intermediate goods that are not exported to a third country after further processing would register a low participation in GVCs.
- 3 The economies covered by the dataset are limited to Argentina, Australia, Brazil, Brunei Darussalam, Cambodia, Canada, Chile, China, Hong Kong (China), India, Indonesia, Israel, Japan, Republic of Korea, Malaysia, Mexico, New Zealand, Norway, the Philippines, the Russian Federation, the Kingdom of Saudi Arabia, Singapore, South Africa, Switzerland, Chinese Taipei, Thailand, Turkey, the United Kingdom, the United States, Viet Nam and all EU countries except Croatia and Cyprus.
- 4 More recently, Daudin et al. (2006; 2009), Escaith (2008), and Koopman et al. (2010) are among the first papers to refer explicitly to a measurement of the value added of trade, with some empirical measurement requiring an international input-output framework. Johnson and Noguera (2012) define value-added exports as the value added produced by the home country and absorbed by its trade partners. They propose the ratio of value added to gross exports (or VAX ratio) as a measure of the intensity of cross-country production sharing. Los et al. (2012) and Stehrer (2012), who are involved in the World Input-Output Database (WIOD) project, carried out research work relating value-added flows with the notions of final demand and production factors.
- 5 The participation index is formally calculated as

$$\text{GVC Participation} = \text{IVA} / \text{EXP} + \text{FVA} / \text{EXP}$$
- 6 This index has been used also in De Backer and Miroudot (2013), OECD (2013a), and UNCTAD (2013a).
- 7 Data are reported on 2008 in order to avoid confounding effects due to the crisis. However, the picture is similar for 2009.
- 8 Comparing graphs between 1995 and 2012 captures change in the role of countries as importers rather than exporters. Because trade flows are normalized as a percentage from the exporter's perspective, the distribution and size of arrows will not change even when the global weight of the country increases, unless its geographical distribution of trade changes dramatically. For example, the number of arcs initiating from China did not change (three and four for final and intermediate goods, respectively).
- 9 See also Johnson (2012).
- 10 The dataset used builds on the OECD-WTO TiVA database, a series of structural economic indicators (World Bank's WDI) and trade policy variables derived from Diakantoni and Escaith (2014).
- 11 Koopman et al. (2010) define an index for the position in a GVC as the log ratio of a country's supply of intermediates used in other countries' exports to the use of imported intermediate goods in its own production:

$$\text{GVC Position} = \log(1 + \text{IVA} / \text{EXP}) + \log(1 + \text{FVA} / \text{EXP})$$
- 12 Using a different methodology, Fally (2012) shows that GVCs have become more downstream in time.
- 13 It should be noted that the role of services in GVCs may be underestimated in the TiVA database. Service activities that are conducted by manufacturing firms in-house – and where, consequently, no arm's length transaction exists – are likely to be allocated to goods value added and trade (Low, 2013).
 The extent of this underestimation depends on the economies' possibility of analysing enterprises or establishments.
- 14 The participation indices shown in Figures C.9 and C.10 differ slightly as they are based on different versions of the OECD-WTO TiVA Database. Utilities are included with agriculture and mining in the primary sector.
- 15 The increased use of services as input into manufacturing means that statisticians are planning to include (intermediate) services in the revision of the Broad Economic Categories classification, which is currently used to define intermediate goods. This inclusion would help define intermediate inputs in a broader context.
- 16 The UNCTAD-EORA dataset is the only one that reports value-added trade for LDCs, but its substantial drawback in doing so is that of estimating input-output relationships for these countries based on other data in the model.
- 17 Indirect service exports refer to domestically-produced service outputs that are recorded in the domestic product. These service enterprises include national as well as foreign-owned enterprises.
- 18 Source: WTO Trade in Services Database and WTO Merchandise Trade Database.
- 19 Box C.4 is based on the results of the note by the WTO Secretariat: WT/COMTD/LDC/W/58.
- 20 The RI indicator is calculated as the share of intra-regional exports in industry k divided by the share of intra-regional exports in overall trade:

$$RI_{jk} = \frac{x_{ij,k} / x_{i,k}}{x_{ij} / x_i}$$
 where x indicates exports and subscripts i, j, k denote exporting region, importing region and industry, respectively. A RI larger (smaller) than one indicates that industry k is traded relatively more (less) intra-regionally than overall trade.
- 21 Taking a different perspective, the *World Trade Report 2013* showed that intra-regional trade in goods has been increasing for most regions since 1990 and, for example, accounted respectively for 52 and 12 per cent of merchandise exports from Asia and Africa in 2011.
- 22 Since data on trade in intermediate services are not available in the TiVA database, no distinction could be made between intermediate and final services trade. RI indicators for the mining and quarrying industries, as well as for electricity, gas and water supply, are not shown.
- 23 Baldwin (2011b), for instance, includes illustrative case studies of the Malaysian and Thai automobile sectors. The Malaysian government continued to push a domestically based industrialization strategy even after 1990 while Thailand was quick to embrace the new trend and make use of spillovers, including by courting Japanese manufacturers. As a result, Thailand's auto industry has experienced strong rises in production and exports, while Malaysia's has stagnated.
- 24 Shifts of employment towards manufacturing and services may even happen if integration is mainly achieved in agricultural GVCs because higher productivity through technology transfer in the agricultural sector would still be likely to set free labour for other uses.

- 25 The *World Trade Report 2013* shows that assumptions on technological progress play by far the largest role in simulation scenarios for future trade growth.
- 26 WTO (2008) highlights three further channels through which trade may impact growth. First, higher trade will enhance competition in the domestic market, generally leading to more innovation (Blundell et al., 1999; Aghion et al., 2005). Secondly, as GVC integration is often associated with trade reform, it may improve a country's institutional framework (Rodrik et al., 2004), for instance by adopting certain international norms favourable to growth. Tang and Wei (2009) find that WTO/GATT accession has favourable effects on growth by committing countries to policy reform. Thirdly, increased trade gives firms access to larger markets for sourcing inputs, thereby giving implicit access to foreign production technology embodied in these goods and ultimately increasing productivity.
- 27 The authors study the Mexican retail sector and find that following the entry of Wal-mex (the Mexican affiliate of Walmart), local retailers started to adopt advanced technologies, such as cold chain (a temperature-controlled supply chain).
- 28 Most innovation in developing economies is based on capability building (Bell, 2007). Innovation through R&D, meanwhile, generally only becomes important at later stages of development. For instance, newly industrialized economies such as the Republic of Korea, Hong Kong (China), Chinese Taipei and Singapore developed into high-income economies through their own capacity to innovate. However, they first had to become efficient production platforms for developed economies (Mahmood and Singh, 2003).
- 29 Also export subsidies of 10 per cent of the value of exports were used for some time to help domestic companies reorient their strategies from local and regional towards global markets. These were phased out by 2003 based on the Uruguay Round decisions (Rodríguez-Clare, 2001).
- 30 To be exact, τ , T , and χ represent unity plus the tariff, transport, and coordination cost markup, respectively.
- 31 Although the agricultural sector sheds labour, it does not imply that the sector's output has to shrink. The IMF (2014) finds that quality upgrading opportunities are also abundant in agriculture but such upgrading typically leads to the shedding of labour in the sector in low-income countries, as farms grow more efficient.
- 32 The labour-intensive apparel global value chain employs 25 million people, with 96-97 per cent employed in assembly line positions (International Labor Office (ILO), 2005; Nathan Associates Inc., 2006). Thus, integration can have a large impact on employment.
- 33 Park et al. (2013 p. 129) illustrate that, for a suit made in China and sold in the United States, only 4 per cent of its value goes towards manufacturing labour.
- 34 Gibbon and Ponte (2005) also point out that demise of national export monopolies in many countries – although they operated inefficiently and often corruptly – constitutes an issue because they allowed coordination of many small firms to facilitate integration into world markets.
- 35 Lead firms typically conduct business in many countries and are involved in about 80 per cent of trade flows (UNCTAD, 2013b).
- 36 Another argument that has been made to explain the position of developing countries in GVCs is based on relative skills. Costinot et al. (2013) present an economic model in which a good is manufactured in different stages. At each production stage, there is a chance that a mistake may occur, resulting in the loss of all inputs embodied in the product up to that stage. Consequently, developing countries, which are assumed to have a higher propensity for making mistakes due to lower human capital, are only involved at the initial low-value added stages of the chain.
- 37 In specialized manufacturing sub-sectors, capabilities can be a crucial proprietary resource if they are distinctive and hard to copy. Many German medium-sized exporting firms have excelled at this type of manufacturing and have discovered small niches in world markets in which many of them are leaders (Venohr and Meyer, 2007; Langenscheidt and Venohr, 2010).
- 38 Case studies document the existence of the smile curves for various sectors. Although the initial "smile curve" was developed for Stan Shih Acer products, it was shown that the same pattern is observed for Nokia (Ali-Yrkkö et al., 2011) and Apple (OECD, 2011) products and the apparel industry (Park et al., 2013).
- 39 Furthermore, power concentration is increasing in consuming countries but decreasing in coffee-producing countries as lead firms are expanding into differentiated products. These can include gourmet coffee and coffee houses, providing high-quality ambiance. For instance, the coffee value-added content of the cost of cappuccino in a coffee house is typically less than 4 per cent (Fitter and Kaplinsky, 2001).
- 40 Giuliani et al. (2005) further argue that lead firms' role is most important in traditional manufacturing clusters in Latin America where relevant technology is not produced locally. The lead firms here replace the virtuous and close relationship between technology producers and technology users that has been important in other cases, such as Italian industrial districts.
- 41 Quadros (2004) illustrates for the case of GM and Volkswagen in Brazil that GVC local suppliers improved their production quality and achieved ISO 9000 certification, largely without the help of lead firms. Instead, technical support came mostly from consultancies and accredited certification institutions. Similar evidence was found for the automotive sectors in Argentina (Albornoz et al., 2002) and Mexico (Dutrenit et al., 2002).
- 42 Furthermore, Section D discusses the role of standards in the agricultural sector. Aloui and Kenny (2005) and (Otsuki et al., 2001) provide case study evidence of the cost of meeting importers' food safety standards.
- 43 These country groupings in Figure C.20 are based on ISO definitions.
- 44 Lack of functional upgrading may also be due to suppliers in captive relationships showing little interest themselves in activities by business chambers aimed at fostering domestic inter-firm networks and functional upgrading (Leite, 2002).
- 45 Artola and Parrilli (2000) find similar results for the milk industry in Nicaragua, in which involvement by multinational lead firms has also fostered upgrading of products and processes but hindered functional upgrading.
- 46 In the Mexican case, regional integration due to NAFTA played an important role in the upgrading of the country's garment industry from simple tasks to more complex ones (Bair and Gereffi, 2001).
- 47 These include, for instance, apparel in Turkey, Morocco and Eastern Europe (Pickles et al., 2006; Tewari, 1999; 2006; Tokatli, 2007; Tokatli and Kizilgun, 2004; 2010) and furniture in South Africa (Kaplinsky et al., 2002), in addition to the examples already mentioned above.
- 48 Two examples for clusters are illustrative. The Delphi automotive cluster in Juárez, Mexico, experienced functional upgrading due to the development of the design and engineering centre of Delphi (Carrillo and Lara, 2004). Meanwhile collective action

- was virtually absent in the Torrejón blue jeans cluster and the institutional environment not favourable to cluster growth (Bair and Gereffi, 2001).
- 49 For instance, through public-private initiatives in the local agricultural development agency, research and technology extension services were made available in the mango and grape cluster of Petrolina Juazeiro in Brazil and promoted a sequence of crops that facilitated the learning process of small growers (Giuliani et al., 2005). Another example is salmon farming in Southern Chile, initially set up by a public actor to prove its profitability. Joint action led by the private sector firms that had joined and supported by public policies (such as a trade market, joint promotion abroad) then underpinned the cluster's development (Pietrobelli, 1998).
- 50 Information gathering about the local economic structure at a micro level may thus have to be an initial step. Enterprise maps of the local economy, which have been devised for a series of African countries by Sutton and co-authors (e.g. Sutton and Kellow, 2010), have reportedly been very helpful for the corresponding governments and have encouraged an optimistic outlook.
- 51 German mid-sized manufacturing exporters are a good example – many of them are global market leaders in their niches (Venohr and Meyer, 2007; Langenscheidt and Venohr, 2010).
- 52 See also Section E with regard to the synchronized nature of trade declines during the Great Trade Collapse of late 2008. Other reasons for the Great Trade Collapse that have been highlighted in the economic literature include amplified demand shocks in goods that are traded heavily, such as capital goods and consumer durables (Bems et al., 2010) and a drying-up of trade finance (Ahn et al., 2011).
- 53 In contrast, the apparel industry in the region was almost unscathed by the Asian financial crisis of 1997–98. Relying heavily on labour-intensive technologies, it neither had high levels of external debt nor the need to source costly foreign inputs.
- 54 Gassebner et al. (2010) study data on disasters in 170 countries between 1962 and 2004. They find that trade impacts were typically contained in this period, which was less shaped by GVCs, but highlight that trade impacts were much larger for disasters in small countries.
- 55 One example is the clothing and textile sector which entered into rapid decline after 2000 (Joomun, 2006).
- 56 Significant investment in production facilities can provide assurance that the supplier will remain in the country. For instance, partly to mitigate relocation risks, Brazil aimed at attracting a large first-tier supplier, Foxconn, rather than a lead firm like Apple, in its attempt to integrate into the consumer electronics GVC (Gereffi and Sturgeon, 2013). Foxconn works with multiple customers and has made commitments to enlarge the production scope in Brazil and increase the domestically created value by sourcing or producing more components in Brazil.
- 57 Of course, GVC integration constitutes a vehicle for many large emerging countries to industrialize, leading to much higher emission levels worldwide and heightened sustainability concerns. The narrow point made here is that industrialization through GVC integration is not likely to be “dirtier” than industrialization under autarky.
- 58 For instance, Milanovic and Squire (2007) and Barro (2000) find that globalization, proxied by tariff liberalization and trade openness, respectively, causes higher within-country inequality in developing countries, while Ravallion (2001) and Dollar and Kraay (2002) cannot confirm such effects.
- 59 See also Wood (2002) and Anderson et al. (2006).
- 60 Goldin and Katz (1998) present evidence for the United States. They suggest that increases in inequality in the United States are partly a result of a slowing rate of accumulation of human capital, which has not kept pace with technological change that, among other things, makes offshoring possible (for instance, through better communications technology). Acemoglu and Autor (2012) highlight that increasing the supply of human capital in developed economies will tend to increase the relative output of these skill-intensive activities, and hence reduce income inequality by decreasing the skill premium that educated workers can command.
- 61 Their sample covers the period 1981–2003, and thus includes the initial rise of GVCs.
- 62 Reuveny and Li (2003) even find that increased trade is related to decreases in income inequality.
- 63 These studies, unlike Jaumotte et al. (2013), do not separately account for the impact of technological progress, which may lead by itself to increased premiums for high-skill workers, even in the absence of FDI.
- 64 Moreover, gains from learning by exporting may not be as large as believed, with some studies pointing out that improvements in exporting firms' product and process performance may instead be the results of investments pre-dating their export activity – not of learning by exporting (Greenaway and Kneller, 2007a).
- 65 The economic literature suggests that country-specific determinants of GVC participation include the quality of communications infrastructure for the transmission of information, the quality of the institutional framework in enforcing contracts, the level of IP protection and any other factors that reduce the cost of offshoring and foreign investment. See, for example, Baldwin and Lopez-Gonzalez (2013), Kimura (2009), Hew et al. (2009), Grossman and Helpman (2005), Nunn (2007), Levchenko (2007), WTO (2013c), and Draper et al. (2013).
- 66 See Harrigan and Venables (2006) and Gamberoni et al. (2010).
- 67 The table shows results using both the share of imports of parts and components and the participation index based on TiVA dataset. The sample of countries varies widely in the two cases, thus affecting the magnitudes of the averages in the table.
- 68 Djankov et al. (2010), Freund and Rocha (2010), Zaki (2010), Hummels and Schaur (2013), and Carballo et al. (2013) analyse the adverse impact of time to trade on trade with different approaches and using datasets.
- 69 Mayer (2001) shows that it is the combination of know-how of the workforce and the importing of machinery which has a positive effect on economic growth. Moreover, technological spillovers increase with the ease of doing business in a country and the quality of its tertiary education system (Coe et al., 2009).
- 70 Also Hoekman and Nicita (2011) and Hufbauer and Schott (2013) provide evidence of the boosting effects of trade facilitation on imports and exports of developing countries.
- 71 Figures obtained from the OECD-DAC Creditor Reporting System (CRS).
- 72 OECD/WTO (2013a) and ODI (2012) provide literature reviews.
- 73 The United Nations Economic Commission for Europe (UNECE) Trade Facilitation Implementation Guide, Recommendation No. 33, describes the “single window” as “a facility that allows parties involved in trade and transport to lodge standardized information and documents with a single entry point to fulfill all import, export and transit-related regulatory requirements” (<http://tfig.unece.org/contents/single-window-for-trade.htm>).

- 74 Blanchard (2014) further points out that this may recast the role of existing GATT/WTO rules as well as create rationales for new multilateral disciplines. For an example on the cumulation of trade costs in a global supply chain, see the *World Trade Report 2012* (WTO, 2012b), Box D.2.
- 75 See IDB (2011; 2013).
- 76 This issue has been examined in previous WTO reports in terms of its application to manufactured goods (WTO, 2001), to non-oil commodities (WTO, 2003), and to natural resources (WTO, 2010).
- 77 Latina et al. (2011) show that tariff escalation can be a “beggar-thy-neighbour” policy because governments may be tempted to use it to alter the relative price of exports to their advantage (terms-of-trade effect) or to expand the domestic processing industry at the expense of foreign production (production relocation effect).
- 78 In order to classify goods into primary, intermediate and final, we follow Sturgeon and Memedovic (2010).
- 79 See Lawrence (1996) and Antras and Staiger (2012) on the systemic implications of global production and deep integration.
- 80 Shares are calculated over a total of 100 mapped agreements.
- 81 The trade and investment literature suggests that what gives the multinational enterprise its competitive edge in international markets is human capital and intellectual property, such as patents or blueprints – see, for example, Helpman (1984); Markusen (1984); Brainard (1993); Brainard (1997) and Markusen (1998).
- 82 Alfaro and Charlton (2009) show that vertical FDI is a far more important phenomenon than was previously thought: in contrast to the existing FDI literature, vertical FDI is more important and represents more than 50 per cent of international transactions across firms compared with horizontal FDI.
- 83 See Osnago et al. (2014) for an analysis of the topic.
- 84 See Section C.1 for a further discussion of servicification of manufacturing activities in GVCs.
- 85 The data (available at: http://www.wto.org/english/tratop_e/serv_e/dataset_e/dataset_e.htm) build on the work in Marchetti and Roy (2009), who construct an index on the following basis for each sub-sector and for both modes 1 and 3: values of 1 for full commitments (without market access or national treatment limitations), 0.5 for partial commitments (with some market access and/or national treatment limitations), 0 for no commitments. Similarly, WTO members that are more involved in GVCs have undertaken commitments across a greater number of service sub-sectors under the GATS.

Appendix Table C.1: Differences in sources of value added in gross exports by exporter and source economy, 1995–2008

EXPORTER	G-20 developing																	Other developing											Rest of the World
	Developed	Argentina	Brazil	China	Indonesia	India	Republic of Korea	Mexico	Russian Federation	Kingdom of Saudi Arabia	Turkey	South Africa	Brunei Darussalam	Chile	Hong Kong, China	Israel	Malaysia	Philippines	Singapore	Thailand	Chinese Taipei	Viet Nam	Cambodia						
Developed	-5.06%	0.03%	0.14%	0.87%	0.05%	0.22%	0.16%	0.15%	1.09%	0.32%	0.09%	-0.08%	0.01%	0.06%	0.03%	0.02%	0.07%	0.00%	0.07%	0.04%	0.04%	0.04%	0.00%	1.63%					
Argentina	0.34%	-4.76%	1.35%	0.84%	0.04%	0.16%	0.13%	0.15%	0.52%	0.11%	0.02%	0.03%	0.00%	0.01%	0.07%	0.00%	0.02%	0.01%	0.05%	0.06%	0.02%	0.01%	0.00%	0.83%					
Brazil	-0.45%	-0.28%	-1.79%	0.50%	0.08%	0.19%	0.06%	0.03%	0.38%	-0.07%	0.01%	-0.09%	0.00%	0.06%	-0.01%	0.04%	0.06%	0.01%	0.01%	0.09%	0.01%	0.01%	0.00%	1.13%					
China	8.80%	0.22%	0.74%	-2.140%	0.24%	0.63%	1.74%	0.10%	0.58%	1.29%	0.05%	0.14%	0.02%	0.34%	0.11%	0.07%	0.84%	0.40%	0.41%	0.45%	1.08%	0.09%	0.00%	3.06%					
Indonesia	-2.06%	0.00%	0.11%	0.92%	-2.71%	0.28%	-0.65%	0.01%	0.14%	1.00%	0.22%	-0.08%	0.00%	-0.01%	0.04%	0.01%	0.68%	0.02%	0.62%	0.27%	-0.33%	0.07%	0.00%	0.90%					
India	4.99%	0.05%	0.15%	1.50%	0.28%	-1.408%	0.33%	0.18%	0.16%	1.32%	0.11%	0.11%	0.00%	0.12%	0.20%	0.12%	0.23%	0.04%	0.26%	0.22%	0.12%	0.04%	0.00%	3.52%					
Republic of Korea	1.31%	0.10%	0.28%	4.23%	0.47%	0.51%	-19.72%	0.03%	0.99%	3.16%	0.04%	-0.14%	0.00%	0.25%	0.17%	0.09%	0.69%	0.19%	0.52%	0.19%	0.52%	0.12%	0.00%	5.90%					
Mexico	-2.62%	0.02%	0.12%	2.30%	0.07%	0.13%	1.08%	-4.10%	0.31%	0.31%	0.03%	-0.02%	0.00%	0.17%	0.03%	0.04%	0.33%	0.14%	0.10%	0.16%	0.36%	0.03%	0.00%	1.00%					
Russian Federation	-2.24%	0.00%	0.00%	0.27%	-0.01%	-0.05%	0.17%	-0.06%	3.26%	0.02%	0.10%	-0.04%	0.00%	0.00%	-0.06%	-0.03%	0.01%	-0.03%	-0.10%	0.00%	0.01%	0.00%	0.00%	-1.22%					
Kingdom of Saudi Arabia	0.38%	0.01%	0.04%	0.12%	0.02%	0.10%	0.02%	0.00%	0.05%	-0.89%	0.03%	0.01%	0.00%	0.01%	-0.01%	0.01%	0.01%	0.00%	-0.01%	0.00%	0.03%	0.00%	0.00%	0.08%					
Turkey	5.87%	-0.02%	0.13%	1.02%	0.08%	0.18%	0.27%	0.00%	4.11%	0.22%	-15.07%	0.02%	0.00%	0.08%	0.01%	0.05%	0.05%	0.02%	0.09%	0.09%	0.05%	0.03%	0.00%	2.71%					
South Africa	1.65%	0.11%	0.10%	0.85%	0.11%	0.27%	0.17%	0.08%	0.44%	2.25%	0.05%	-9.35%	0.00%	0.03%	0.03%	-0.03%	0.08%	0.02%	0.14%	0.09%	-0.08%	0.02%	0.00%	2.96%					
Brunei Darussalam	-5.89%	-0.01%	0.01%	0.13%	0.01%	0.06%	0.15%	-0.01%	-0.21%	0.05%	-0.05%	-0.02%	0.00%	-0.01%	-0.07%	0.00%	-0.29%	-0.01%	-2.02%	-0.14%	-0.12%	0.01%	0.00%	0.14%					
Chile	-0.41%	-0.10%	0.54%	1.05%	0.09%	0.09%	0.58%	-0.05%	0.27%	0.24%	0.41%	-0.09%	0.00%	-5.61%	0.61%	-0.01%	0.04%	0.02%	0.09%	0.03%	-0.03%	0.01%	0.00%	2.21%					
Hong Kong, China	-9.01%	0.02%	0.03%	-0.55%	-0.31%	0.49%	-1.00%	-0.08%	-0.04%	0.31%	-0.13%	-0.32%	0.00%	0.04%	11.53%	-0.08%	-0.05%	-0.13%	-0.04%	-0.12%	-1.81%	0.02%	0.00%	1.23%					
Israel	-0.73%	0.01%	0.11%	1.65%	0.21%	0.74%	0.11%	0.11%	1.03%	0.30%	0.63%	-0.10%	0.00%	0.02%	0.16%	-6.31%	0.04%	0.03%	0.28%	0.05%	0.09%	0.05%	0.00%	1.50%					
Malaysia	-8.37%	0.00%	0.10%	2.44%	0.29%	0.75%	0.06%	-0.03%	0.14%	0.81%	-0.08%	-0.06%	0.00%	-0.03%	-0.10%	0.07%	2.20%	0.07%	-0.37%	0.37%	-0.20%	0.27%	0.00%	1.67%					
Philippines	-0.52%	0.06%	-0.03%	3.55%	-0.11%	0.25%	0.96%	-0.05%	-0.48%	1.56%	-0.03%	-0.06%	0.00%	0.00%	-0.42%	-0.02%	1.55%	-10.81%	2.01%	0.56%	1.10%	0.46%	0.00%	0.43%					
Singapore	-2.49%	0.19%	0.19%	1.66%	0.01%	1.50%	-0.08%	0.01%	0.81%	1.72%	0.14%	-0.11%	0.00%	0.08%	-0.22%	0.18%	-0.28%	-0.07%	-6.40%	-0.77%	0.18%	0.11%	0.00%	3.63%					
Thailand	-3.56%	0.06%	0.29%	2.90%	0.43%	0.28%	0.49%	0.04%	0.28%	1.66%	0.02%	-0.05%	0.00%	-0.01%	-0.01%	0.02%	0.84%	0.05%	0.00%	-7.92%	0.45%	0.27%	-0.10%	3.64%					
Chinese Taipei	-5.71%	-0.02%	0.32%	4.41%	0.83%	0.47%	1.32%	0.05%	0.04%	3.62%	0.03%	-0.29%	0.00%	0.02%	-0.03%	0.11%	0.62%	0.17%	0.16%	0.12%	-11.91%	0.10%	0.00%	5.56%					
Viet Nam	1.20%	0.17%	0.40%	5.17%	0.27%	0.82%	-0.13%	0.05%	0.82%	1.36%	0.06%	-0.02%	0.00%	0.07%	-0.37%	0.04%	0.63%	-0.01%	0.90%	0.91%	0.17%	-15.40%	0.04%	2.84%					
Cambodia	-2.43%	0.02%	0.10%	5.57%	-0.25%	0.47%	0.53%	0.02%	0.67%	0.50%	0.03%	0.00%	0.00%	0.03%	1.61%	0.01%	-0.24%	0.02%	-0.59%	0.49%	1.4%	1.33%	-10.10%	1.09%					

□ indicate domestic value added

Source: Calculation on TIVA.

Note: The elements on the diagonal of the table represent the change in domestic value added in gross exports; the off-diagonal numbers indicate the change in the share of value added from a country in the columns embedded in the exports of a country in the rows.

D. A new role for commodities in development strategies

This section discusses the challenges and opportunities of commodity-based growth and development strategies in relatively high but volatile pricing environments. It first provides an overview of historical price developments in agriculture and natural resources. It then goes on to analyse how developing countries have been able to leverage agricultural and natural resource export potential in this high-price environment to underpin their development. The section highlights which policies have been useful, but also pinpoints remaining challenges in realizing this export potential. Finally, it also considers those challenges arising from heightened volatility, with a particular focus on food importers and natural resource exporters vulnerable to boom-bust cycles.

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Some key facts and findings

- The real annual price index for energy and for metals and minerals more than doubled between 2000 and 2011. Agricultural prices nearly doubled during the same period. The largest price increases occurred up to 2008. Despite recent price reductions from these historical highs, there are reasons to believe the high-price environment is likely to stay. Price volatility will also continue to characterize commodity markets.
- Between 2001 and 2011, G-20 developing countries increased their share in global agricultural exports from 19 per cent to 26 per cent. The share of other developing countries increased from 8 per cent to 10 per cent.
- Traditional market access barriers such as tariffs and subsidies continue to affect agricultural exports from developing countries, but non-tariff measures are playing an increasingly important role in agricultural trade.
- Trade in natural resources increased significantly between 2000 and 2010, not only in value terms but also in terms of volume. In 2012, the combined share of agricultural products and fuel and mining products in world trade was 31.7 per cent, up from 25.4 per cent in 2005 and 21.7 per cent in 2000.
- Several resource-rich countries achieved significant growth rates during the years of soaring natural resource prices, but the social and environmental impact of natural resource extraction remain significant challenges.

Throughout this section, the word “commodities” will refer both to what Morris et al. (2012) call “soft commodities” (predominantly agriculture) and to what they call “hard commodities” (predominantly mining) and “energy commodities” (predominantly oil and gas). Mineral products (including metals) and energy products (coal, oil and natural gas) will fall under the designation of “natural resources”. Agricultural products, in turn, will include traditional products, fresh fruit and vegetables, specialty products and processed products (see Box D.3). In line with the rest of the Report, in this section G-20 developing countries indicates developing country members of the G-20 (as defined in Appendix Table B.1) and not the “G-20 group of developing countries” relevant for agricultural negotiations at the WTO.

This section will analyse natural resources¹ and agriculture separately. This is for three main reasons. First, there are differences in the production and consumption structure across the two sectors. The weight of the agricultural sector in terms of employment and consumption is significantly higher than that of the natural resources sector. Moreover, agricultural production relies a lot more on smallholder production than the natural resources sector. Secondly, most (although not all) of the development challenges and opportunities are different in the two sectors. To provide an example, while the issue of management of windfall revenue is crucial in the natural resources sector, it does not play a significant role in the agricultural sector.² Thirdly, the trade policy issues are very different. While in the natural resources sector they mostly relate to export restrictions applied by exporting countries, in the agricultural sector they also relate to market access (subsidies, tariffs and non-tariff measures applied by importing countries).

This section is divided into six parts. Section D.1 provides an overview of historical price developments in natural resources and in agriculture. For a long time, the debate about the role of commodities in developing countries has been dominated by the notion that the price of primary products, such as natural resources, relative to manufactured goods tends to decline, a phenomenon known as the Prebisch-Singer Hypothesis. Although the validity of this hypothesis, dating from the 1950s, is disputed by experts (see discussion in Cadot et al., 2011), it has often been used as an argument against developing countries’ strengthening and expanding production in the primary sector, and in favour of these countries diversifying into other areas, such as manufacturing. Recent years have been characterized, however, by high commodity prices. The aim is to establish whether the high prices that have been characteristic of this sector since the mid-2000s are likely to stay, especially in view of the recently observed price reductions from the historical highs of 2008 and 2011. At this stage, the analysed evidence seems to suggest that, in the medium-term, commodity prices are likely to remain relatively high but that high prices will be accompanied by the volatility typical for prices in this sector.

Section D.2 focuses on the link between agricultural trade and development and investigates how the changing structure and nature of agricultural trade affects this link. Section D.3 considers the policy environment in agriculture, focusing on productivity-enhancing policies, standards, market access restrictions, bargaining power within global value chains, and policies to cope with volatility. Section D.4 considers natural-resource-based growth. It asks whether such growth can be sustained and whether it can be translated into positive development outcomes. Section D.5 considers trade policies explicitly, with a particular focus on the policies implemented by resource-endowed countries in their quest for development. Section D.6 concludes.

1. The rise (and fall) of a commodity “super-cycle”?

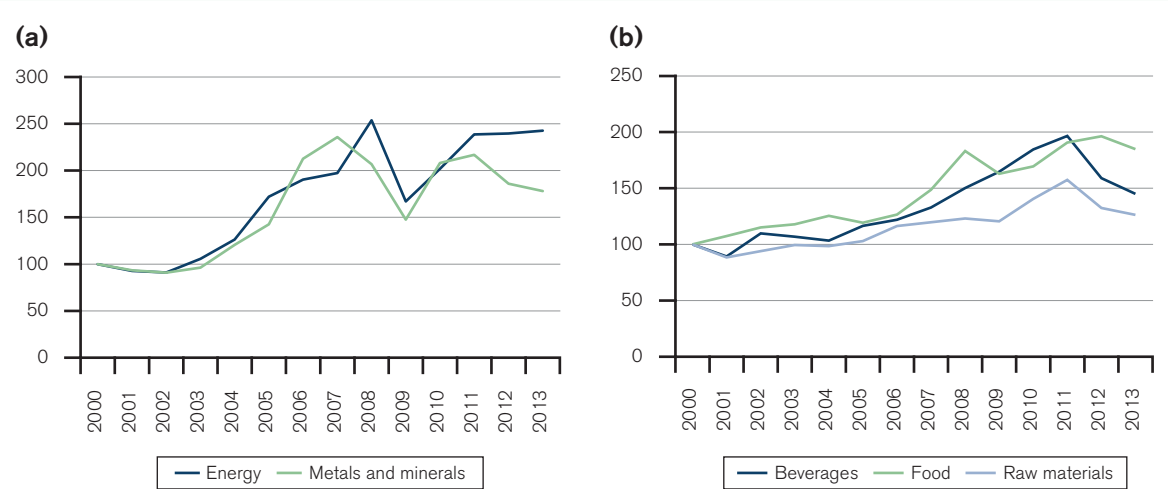
The prices of natural resources and of agricultural products increased significantly between 2000 and 2008 (with particularly steep rises from 2003). The real annual price index of energy and of metals and minerals more than doubled during this period (see Figure D.1). A subsequent slump in 2008–09 was caused by the global financial and economic crisis. However, they increased again between 2009 and 2011. Agricultural prices nearly doubled between 2000 and 2011, as reflected in Figure D.1.

While energy prices have remained remarkably stable since 2011 (mostly due to stability in oil prices), prices of metals and minerals have experienced a significant downward trend in the last two years. As reported by the World Bank (2014), real prices of internationally traded metals, denominated in US dollars, declined by 30 per cent between their peaks in early 2011 and November 2013. In the same period, real prices of internationally traded food, denominated in US dollars, declined by 13 per cent. Even though prices have eased recently, they are still twice as high compared with a decade ago.

Episodes of increasing commodity prices and boom-bust cycles are not uncommon (Fuglie, 2012; WTO, 2010). Figure D.2 plots the historical evolution of real commodity prices since 1960. In the top panel, it is immediately apparent that energy prices and, to a lesser extent, mineral prices have experienced several episodes of upward and downward evolution between 1960 and 2000. The same volatility is also apparent for agricultural commodities. Box D.1 discusses in more detail the volatility of commodity prices.

Some authors have argued that the steep increase in commodity prices that occurred at the beginning of the 2000s has been a reflection of a third commodity “super-cycle”, after the first super-cycle driven by demand-side American industrialization in the late 19th century and the second driven by the post-Second World War reconstruction in Europe and Japan.³ The rapid pace of industrial development and urbanization in several G-20

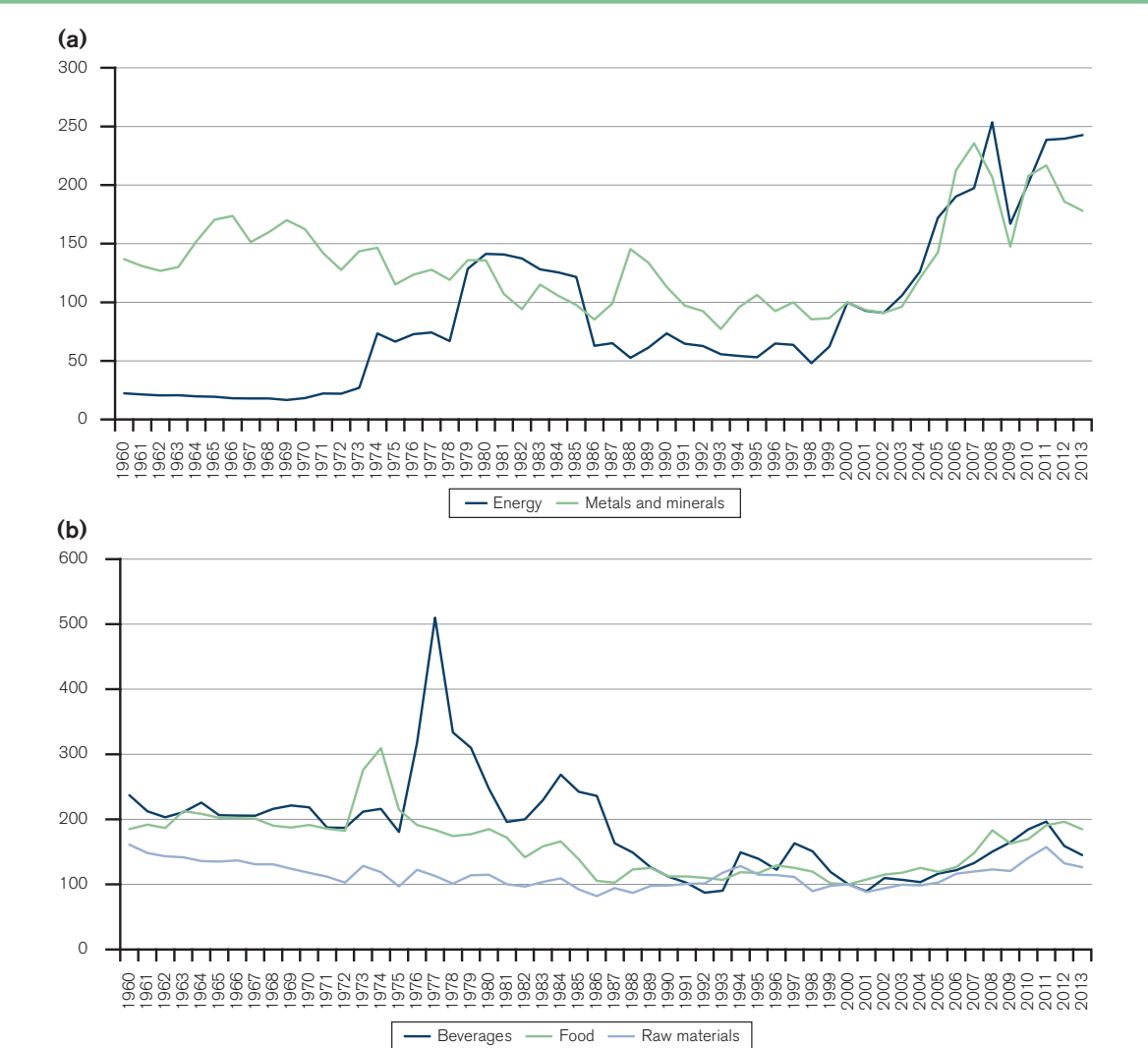
Figure D.1: Real annual price indexes of selected commodities, 2000–13
(2000 = 100; real 2005 US\$)



Source: World Bank Commodity Price Data.

Note: A detailed description of the series, including data sources, is available in the "Description" section of the annual World Bank Commodity Price Data.

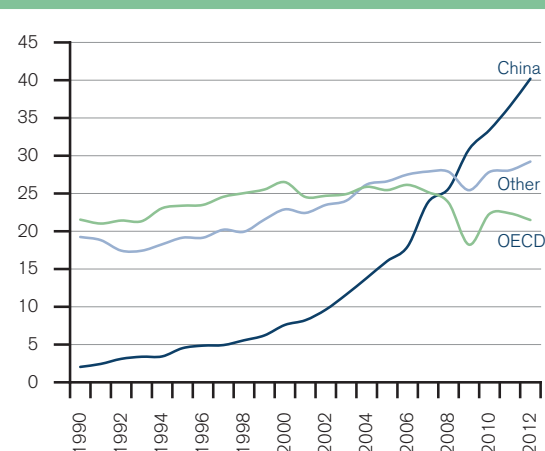
Figure D.2: Real annual price indexes of selected commodities, 1960–2013
(2000 = 100; real 2005 US\$)



Source: World Bank Commodity Price Data.

Note: A detailed description of the series, including data sources, is available in the "Description" section of the annual World Bank Commodity Price Data.

Figure D.3: Consumption of metals, 1990–2012
(million tons)



Source: World Bureau of Metal Statistics.

developing economies has been the main driver of the third super-cycle. As argued by the Africa Progress Panel (2013) with reference to mineral commodities, China has been the real game-changer in global commodity markets because of its rapid resource-intensive growth, coupled with the high costs of extraction of its ores.⁴ Figure D.3 shows the evolution of demand for metals for China, countries of the Organisation for Economic Co-operation and Development (OECD) and the group of other countries. The spectacular growth in China's consumption is clearly apparent.

China's demand for energy has also increased substantially, both in absolute terms and in comparison with other industrial countries. Analysis of BP data (British Petroleum (BP), 2013) shows, for instance, that China's demand for oil almost tripled (a 273 per cent increase) between 1992 and 2012, and almost doubled (94 per cent increase) between 2002 and 2012. In comparison, demand for oil in OECD countries rose by 6 per cent between 1992

Box D.1: Commodity price volatility

It is widely recognized that natural resource prices are highly volatile. The WTO (2010), for instance, included volatility in the list of distinctive characteristics of natural resources. As explained by the WTO (2010) with reference to oil prices, volatility (at least in the long run) is largely caused by demand-driven factors, such as the rapid income growth of key G-20 developing economies. Volatility has long been a concern for resource-exporting countries for at least three reasons. First, it is a source of uncertainty that adversely affects investment and production decisions. Secondly, risk-averse consumers need to spend income on hedging against the risk of large swings in resource prices. Thirdly, when exporters borrow against high export earnings to fund additional imports and consumption, they may confront worrisome debt burdens when natural resource prices fall.⁵

Volatility of agricultural commodity and food prices has also been a concern for several decades. As argued by Gilbert and Morgan (2010), volatile grain prices impact disproportionately the poorer rather than the richer economies, and the poor rather than the rich within each economy. This is because direct consumption of grains declines as societies and individuals get richer. They argue that food price volatility can raise consumer price inflation and create exchange rate uncertainty. In particular, scarce foreign exchange reserves can be exhausted relatively quickly following a sudden spike in food prices, as the demand for food imports is relatively constant despite fluctuations in prices. Price volatility can even lead to social unrest.

Following Lee et al. (2012), we have constructed two measures of commodity price volatility, using monthly data from the World Bank Commodity Price Data since 1970. The first measure is a moving-window standard deviation. The second measure is a moving-window coefficient of variation (standard deviation divided by mean). In both cases, each window is defined over a 60-month interval. The first measure, therefore, captures standard deviation of monthly values from the five-year average. The second measure captures the percentage deviation from the same average.

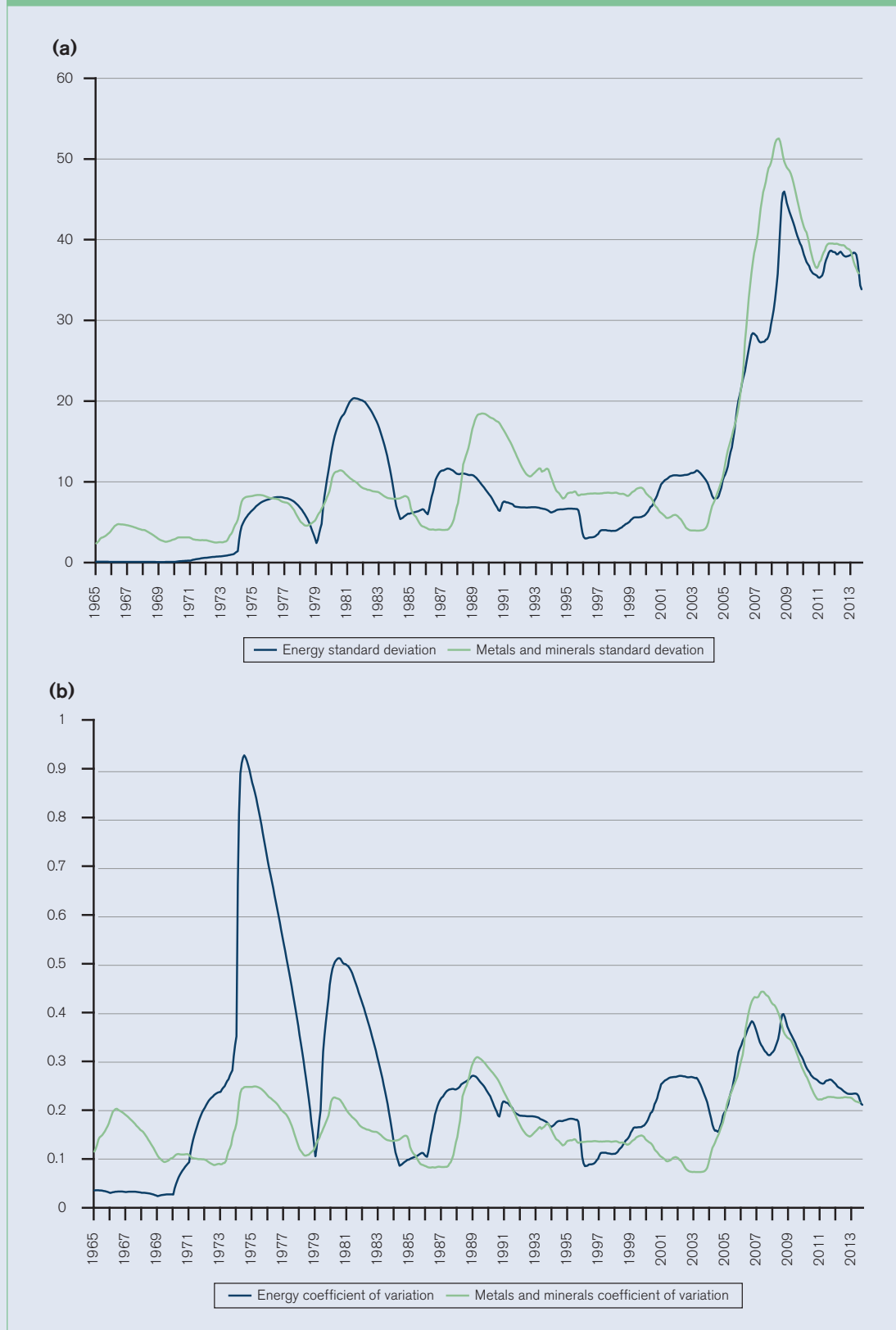
The results for energy and for metals and minerals prices are, respectively, in the top and bottom panels of Figure D.4. Prices are indeed volatile, and volatility has been high during the last decade. An interesting question is whether price volatility has increased over time. To answer this question, one should probably consider the relative size of price shocks in proportion to prevailing price levels (bottom panel) rather than the absolute size of price fluctuations (top panel). The time-series evolution of the coefficient of variation indicates that energy prices were far more volatile after the first oil price shock of 1973 than in the aftermath of the crisis of 2008. Metals and mineral prices, conversely, experience record-high levels of volatility in 2008 compared with any other year since 1960.

Observers appear to agree that price volatility for agricultural commodities in the last five years has been higher than in the previous two decades, but lower than in the 1970s. When comparing recent price changes with price behaviour over the very long run, there is also no evidence that there has been a permanent increase in commodity price volatility (Jacks et al., 2011). This is confirmed by the data reflected in Figure D.5 that illustrates the standard deviation and the coefficient of variation of agricultural products (raw agricultural materials, food products and beverages).

The overall conclusion is that, in recent years, volatility has been high. In most cases, it has not reached the peaks observed during the 1970s. Still, price volatility is, and is likely to continue to be, a concern for importing and exporting countries.

Box D.1: Commodity price volatility (continued)

Figure D.4: Volatility of price indexes of selected commodities, 1965m1–2013m9*



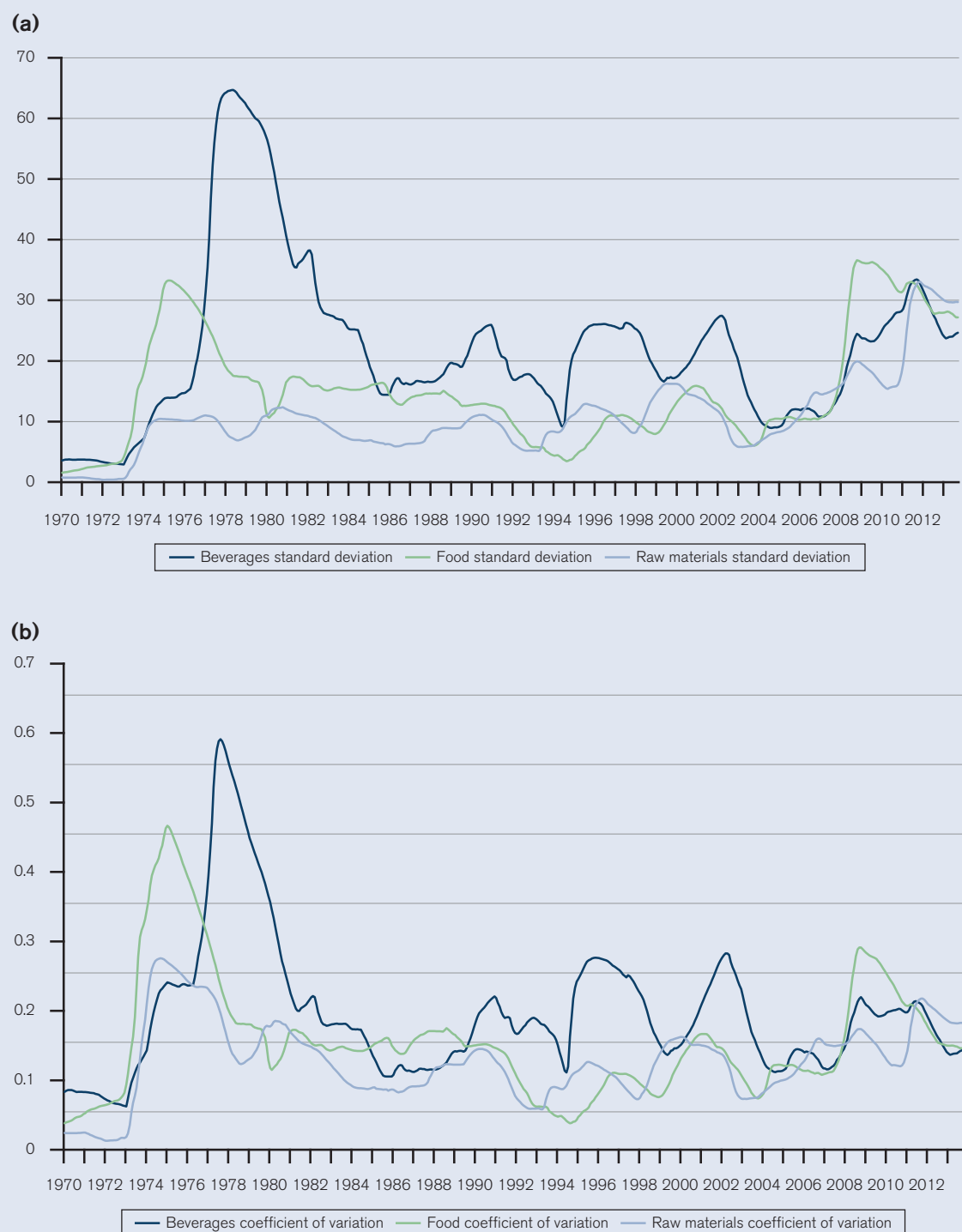
Source: World Bank Commodity Price Data.

Note: Panel (a) moving window (60 months) standard deviation; panel (b) moving window (60 months) coefficient of variation (standard deviation/mean).

* "m" refers to "month".

Box D.1: Commodity price volatility (continued)

Figure D.5: Volatility of price indexes of selected commodities, 1970m1–2013m9*



Source: World Bank Commodity Price Data.

Note: Panel (a) moving window (60 months) standard deviation; panel (b) moving window (60 months) coefficient of variation (standard deviation/mean).

* "m" refers to "month".

and 2012, and it fell by 5.5 per cent in the last decade. Demand for oil in countries other than China or the OECD group rose by 32 per cent between 1992 and 2012, and by 14 per cent in the last decade.

Economic growth is slowing down in China but growth rates remain high. GDP growth, which was as high as 10 per cent (measured in USD 2005 PPP), is projected to attain a still considerable 6.6 per cent in the period 2011-30 (OECD, 2012). Accordingly, there is little reason to expect any significant slowdown in its demand for imports of mineral resources. The Chinese steel industry, for instance, is set to increase output from 700 million tonnes (Mt) to 900 Mt by 2030 (Lee et al., 2012). At the same time, other G-20 developing economies will experience high and sustained growth rates in the next decades. Notably, in the period 2011-30, Brazil's GDP is projected to grow at a rate of 4.1 per cent, Indonesia's at 5.3 per cent and India's at 6.5 per cent (OECD, 2012). Although some G-20 developing economies are net exporters of metals, OECD projections suggest that overall demand for metals will grow at 5 per cent a year up to 2030, mainly driven by new players in the international economic arena. Recent price declines of metals reflect moderate demand growth in G-20 developing and most OECD economies, together with a strong supply response. The latter was the result of increased investment of the past few years which was induced by high prices (World Bank, 2014).

Demand-side effects will continue to dominate energy price trends in the near future. The International Energy Agency (IEA) (2013) predicts that global energy demand will increase by one-third from 2011 to 2035. Although the share of fossil fuels, such as coal, oil or natural gas, in the world's energy mix is predicted to fall from 82 per cent to 76 per cent in 2035, demand will grow for all forms of energy, including fossil fuels.⁶ Notably, demand for natural gas is expected to rise by almost 50 per cent by 2035 (IEA, 2013).

In the case of agricultural commodities, different causes have been identified for the price hikes that began in 2003. The most notable are extreme weather, policies to promote use of biofuels, depreciation of the US dollar, longer-term economic growth in several large developing countries, increased demand for commodity futures markets as a result of both speculation and portfolio diversification, low levels of stocks caused in part by some of the factors noted above, and trade policies that encouraged producers to withhold supplies (Anderson et al., 2013; Gilbert and Morgan, 2010).

There are, however, reasons to believe that demand for food will grow in the future because of the growth in a number of large G-20 developing economies. The Food and Agriculture Organization of the United Nations (FAO) (2011b), for instance, predicts that by 2050 global food production will have to further expand by 70 per cent in order to feed a growing world population and simultaneously

address existing malnutrition and hunger. Some have therefore argued that high (rather than declining) food prices are going to predominate in years to come.

Another reason why agricultural and food prices are likely to remain high in the years to come is the relationship between oil and food prices, which has increased dramatically since 2006. Some claim that the connection between food and oil is systemic: modern agriculture uses oil products to fuel farm machinery, to transport other inputs to the farm and to transport farm output to the ultimate consumer (Heinberg, 2011). Moreover, oil is often used as input in agricultural chemicals. Oil price increases therefore put pressure on all these aspects of commercial food systems. The European Commission (2012) confirms that energy prices (costs) cause an increase in the price of fertilizers and food commodity prices. A recent study by Baffin and Dennis (2013) reaches similar conclusions: oil prices affect food prices more significantly than several other long-term price drivers, including exchange rates, interest rates and income.⁷

Demand- and supply-side developments, technological change, environmental policies, consumers' preferences and several other factors will interact in complex ways to affect the evolution of prices of commodities.⁸ Such evolution is therefore subject to uncertainty, and that uncertainty needs to be taken into account when formulating growth strategies based on commodity production and export.

2. Agricultural trade and development

The agricultural sector represents an important share in the overall economy in developing countries and above all in least-developed countries (LDCs). In many countries, technological change and changes in production and distribution processes have contributed to modernizing parts of the agricultural sector in recent years and to giving the sector a more dynamic role within the overall economy. High agricultural prices relative to other sectors have also provided an opportunity for some countries to reap windfall benefits, notably through agricultural exports. For other countries, high agricultural prices have increased the cost of importing food, with potentially undesirable consequences for poverty levels.

The question discussed in this section is whether recent changes in the agricultural sector are likely to affect the sector's role in developing countries. The question is also asked whether these countries have been able to take advantage of recent price changes or whether those changes have represented a burden for them.

- (a) The agricultural sector is important for development

In many developing countries, the agricultural sector is crucial both in terms of production and consumption. On

the supply side, the agricultural sector employs around half of the labour force in the developing world. The sector represents over 70 per cent of the labour force in LDCs. The sector's relevance in terms of consumption stems from the fact that poor households tend to spend a large share of their income on food. Combined with the fact that three out of every four poor people live in rural areas in developing countries and that most of them depend on agriculture for their livelihoods (World Bank, 2007), it is obvious that the sector is of utmost importance for any development strategy in the developing world.

Evidence suggests that growth in agriculture delivers more poverty reduction than growth in other sectors in low-income economies and that virtually all economies that managed to reduce poverty significantly went through a period of increased agricultural productivity (World Bank, 2007; Timmer, 2009). More specifically, Christiaensen et al. (2011) find that growth in agriculture is significantly more effective in reducing poverty among the poorest of the poor than growth in other sectors. This is the case because of the much larger participation of poorer households in growth from agriculture and the lower poverty reducing effect of non-agriculture sectors, particularly extractive industries.

According to Maertens et al. (2011), a positive effect on reducing poverty also materializes if agricultural productivity is enhanced through the integration of developing countries into global value chains – effectively world production lines. Globally, over one-third of the workforce active in agriculture has the status of “own account workers” (i.e. the self-employed) and around one-quarter of the workforce consists of contributing (unpaid) family workers (Cheong and Jansen, 2013). This suggests that informal employment is widespread in developing countries' agriculture as both groups of workers are often informally employed (International Labour Office (ILO) and WTO, 2009). Households in this sector are also often resource-poor and lowly educated. One way through which integration in global markets contributes to poverty reduction is by giving such households access to paid (wage) employment in the agro-industry. The number of smallholders may decline but overall the effect on poverty reduction is significant because the poorest households are better off in a situation of wage employment (Maertens and Swinnen, 2009; Maertens et al., 2011).

In the following section, we examine whether recent developments in the agricultural sector have affected developing countries' possibilities to use increased integration in global agricultural markets as a development strategy.

(b) Agricultural trade: new opportunities and challenges for developing countries

The agricultural sector has changed remarkably in the past decades. Global agricultural trade has increased significantly and the relative weight of different market

segments has changed both in terms of products and destination markets. In addition, new production structures are being used across the world. These changes represent both opportunities and challenges for developing countries.

(i) *Agricultural trade contributes to growth and poverty reduction*

Recent decades have witnessed an increase in global agricultural trade and therefore increased opportunities for exporters of agricultural products. In terms of value, exports of agricultural products nearly tripled between 2000 and 2012 (WTO, 2013). This change was to a large extent driven by the price increases described above. In volume terms, exports increased by around 60 per cent over the same period (WTO, 2013). There are reasons to believe that agricultural exports will continue to increase in volume terms. The FAO, for instance, predicts that trade in agricultural commodities will continue to expand considerably until 2050 (FAO, 2009).

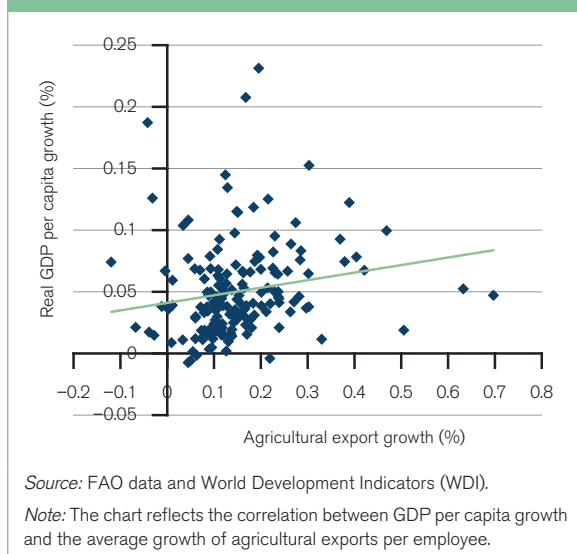
Agricultural trade as a share of domestic agricultural production and consumption has also increased in recent decades. The average annual volume growth in agricultural trade between 1950 and 2010 was about 4 per cent and therefore higher than the annual growth in global agricultural production of 2 per cent (Cheong and Jansen, 2013; Cheong et al., 2013). This reflects an increased integration of the agricultural sector into global markets. For many developing countries, revenue from agricultural exports is today a major source of income. In Latin America, excluding Mexico, the share of agricultural export revenue in total merchandise export revenue is 30 per cent (Cheong et al., 2013). In some sub-Saharan African countries and several other low-income countries, agricultural products account for almost half of merchandise export revenue.

Increased demand for high-value products and high prices in international food markets have created opportunities for developing countries to generate economic growth through increased exports (Maertens and Swinnen, 2014). The simple correlations reflected in Figure D.6 suggest that increased agricultural exports have been associated with higher GDP per capita growth during the past decade.⁹

In addition to the growth potential of agricultural exports, those exports have a particularly strong potential for raising rural incomes and reducing poverty as explained above (Aksoy and Beghin, 2005; Anderson and Martin, 2005; World Bank, 2007). Many developing countries recognize these opportunities and explicitly mention in their Poverty Reduction Strategy Papers (PRSPs) the development of high-value food export sectors (mainly horticultural exports) as an important strategy to foster growth and alleviate poverty (Maertens and Swinnen, 2014).

The role of agricultural exports in reducing poverty is also frequently highlighted by Diagnostic Trade Integration Studies (DTISs). These are used to analyse the export potential of

Figure D.6: Agricultural exports and economic growth, 2001–12



different sectors and sub-sectors and to identify supply-side constraints. DTISs typically contain an action matrix with advice on how to overcome the most important supply-side constraints. This information is used by the Enhanced Integrated Framework (EIF), a multi-donor programme that coordinates trade-related technical assistance for LDCs.

The 12 DTISs analysed for this report all highlighted the potential role of agricultural exports for poverty reduction. Nine of them also indicated that there was potential for increased exports in the sector.¹⁰ Cotton, coffee and fish are among the products with export potential most frequently highlighted in the 12 DTISs (see Table D.1).

Recent microeconomic studies have made it possible to get a better understanding of the channels through which agricultural exports contribute to poverty reduction. Box D.2 illustrates this using the example of bean and tomato exports in Senegal. Increasingly, private and public sector initiatives build on this experience to increase the integration of domestic production in global markets, with resulting benefits for the local economy.

Awareness of the potential of agricultural exports for development has thus risen in recent years. Increasingly, developing countries have access to tools and information that can help them to connect to global markets. Implementing an export strategy successfully nevertheless remains challenging for many developing countries, notably in the context of the dynamic and changing environment described in the following sections.

(ii) *New market segments gaining in prominence*

Agricultural products differ significantly regarding the climate in which they are produced (e.g. temperate vs. tropical), the production process used (plantation vs. small scale; gestation period), transport methods used for trade (marine bulk cargo vs. air cargo) and the role of the product in the population's diet (e.g. staple crops vs. other food items). As a consequence, different categorizations for agricultural products have been used in the trade literature.

For the purpose of this section on the role of agricultural trade for development, agricultural trade is subdivided into four groups: traditional exports, fresh fruit and vegetables, specialty products, and processed agricultural goods (see

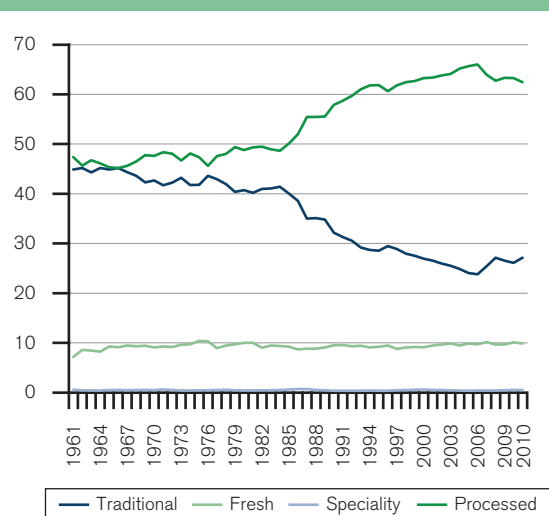
Table D.1: Products with export potential identified in selected DTISs

		Cashews	Cocoa	Coffee	Cotton	Fish	Flowers	(Ground)nuts	Livestock	Tea	Tobacco
Mauritania	2001					X			X		
Mozambique	2004	X				X					
Niger	2008								X		
Rwanda	2005			X						X	
Sao Tomé and Príncipe	2006					X					
Senegal	2003					X	X				
Sierra Leone	2006	X	X				X				
Sudan	2008				X				X		
Tanzania	2005	X		X	X					X	X
Togo	2010		X	X	X						
Uganda	2013			X	X	X	X			X	
Zambia	2005			X							X

Source: Authors' computations based on selected DTISs.

Note: Only products mentioned in at least two DTISs are represented in this table.

Figure D.7: Share of traditional, processed, fresh and speciality products in total agricultural exports, 1960–2010
(per cent)



Source: WTO Secretariat calculations based on FAO data.

Note: The product classification used is inspired by the FAO (2004), and has been established as follows: (i) traditional agricultural exports: bananas and citrus; beverages of crude materials; staple crops, (ii) fresh fruit and vegetables: fresh fruit, fresh vegetables and nuts; (iii) speciality products: spices; (iv) processed agricultural products: alcoholic beverages; animal food; meat and eggs; milk; oils and fats; processed beverages; processed crops; processed fruit and vegetables; processed materials; sugar; chocolate.

Box D.3). The three last groups are typically considered to represent high value added agricultural exports and are therefore considered by some to have a greater potential to contribute to growth. Box D.3 provides more insights on the composition of the groups and on how the categories used in this section relate to those used in the relevant literature.

An important phenomenon of the past 50 years has been that the share of raw traditional agricultural exports in global agricultural exports has declined significantly, implying that the weight of high value-added agricultural trade has increased. The traditional agricultural exports segment includes cereals (including wheat, rice and maize), beverages (coffee, tea, cocoa), banana and citrus fruit, oilseeds and raw materials (including wood and rubber). Until the mid-1980s, raw traditional agricultural products represented around 40 per cent of total trade in agricultural goods. In the following decade, the share dropped sharply by over ten percentage points (see Figure D.7). Processed agricultural products (which include processed traditional export products) now represent over 60 per cent of total exports of agricultural goods.

(iii) *New destination markets*

Patterns of trade have changed significantly in recent years. The share of Asia – and in particular of China – as an importer of agricultural products has increased significantly in the past

decades. In 1990, agricultural imports of European countries were twice as high as those of Asian countries. In 2000, European imports exceeded those of Asia by less than 50 per cent and in 2012 by a mere 25 per cent. China was the ninth-largest importer of agricultural products in 2000 but ranked second in 2012 behind the European Union.¹¹

These changes in the relative weight of different destination markets are even more pronounced in trading patterns of developing countries. Asia has overtaken Europe as the main LDC export market for agricultural products. In 2012, 39 per cent of LDC exports went to Asia. Africa, with a market share of 23 per cent, was the second-largest regional destination market for LDC exports, followed by Europe with 22 per cent (see Table D.2). The role of Asia as a destination market for LDC exports is lower in agriculture than it is for fuel and mining products (54 per cent) but more important than in the case of manufacturing exports (19 per cent).

Table D.3 reflects changes in the export patterns of LDCs according to income groups. In 2000, half of LDC agricultural exports were directed towards developed economies. WTO estimates suggest that this share had shrunk to one-third by 2012. Other developing countries as a group now receive 69 per cent of LDC agricultural exports. The export share to other LDCs nearly doubled over the 12-year period and the export share to developing countries that are neither LDCs nor G-20 increased by around 50 per cent. The weight of G-20 developing economies in LDC agricultural exports remained fairly stable.

(iv) *New production structures*

The agricultural sector has been undergoing a number of other important changes in recent years. The sector has attracted significant levels of investment, including in the form of foreign direct investment (FDI). Food standards are spreading rapidly and food supply chains are characterized by increased levels of vertical coordination. These changes have important implications for developing countries (Maertens and Swinnen, 2014).

A series of major food safety problems in high-income countries has led to increased demand in these countries for food safety and for standards and regulation guaranteeing food safety. As a consequence, there appears to be an increased use of food safety and quality standards within agricultural value chains. Those standards can be of a public or private nature.¹² The need for final consumer products to meet certain standards has led to an increased emphasis on quality control within agricultural value chains and this, in turn, has affected the way in which such chains function. In addition, final good producers and retailers in industrialized countries increasingly apply product differentiation strategies in food products. This means that competition takes place not only in price but also in factors such as reliability, product variety, product quality and speed of innovation (Dolan and Humphrey, 2010). Increasingly,

Box D.2: Bean and tomato exports from Senegal¹³

Two Senegalese case studies illustrate the channels through which agricultural exports contribute to poverty reduction. They also show that contributions to poverty reduction can be strong in cases where smallholder farming is replaced by wage employment.

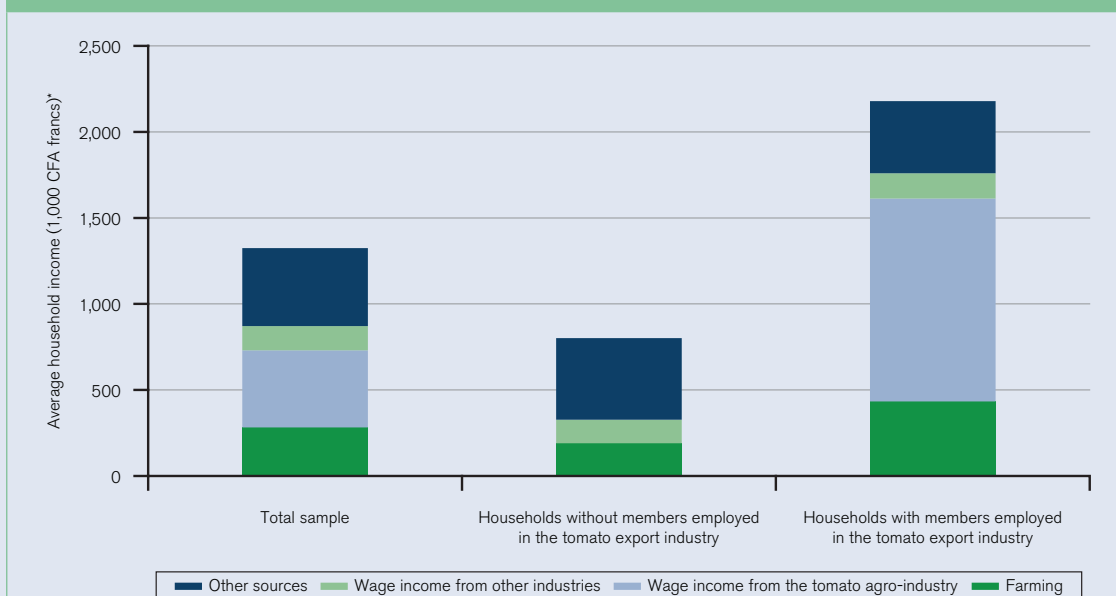
The Senegalese tomato export sector is dominated by one multinational company that started exporting tomatoes from Senegal to the European Union in 2003. The tomato export supply chain is completely vertically integrated under a common ownership. Smallholder procurement is 0 per cent and production, processing, trade and distribution are completely integrated within the subsidiaries of the multinational company. This is an extreme case of complete vertical integration. Rural households only benefit through labour market effects as there is no contract-farming and procurement from smallholder farms.

Evidence, however, suggests that poor households, and in particular the poorest among them, benefit from this form of integration because of the creation of employment in tomato export chains. Households employed in the tomato export industry, either on the fields or in the processing units of the export company, have incomes that are more than double the income of other households in the region (see Figure D.8). Before the multinational company was established in 2003, these households had lower land and non-land asset holdings. Increased tomato exports have resulted in increased employment, increased incomes and ultimately reduced levels of poverty and extreme poverty (see Figure D.9).

The Senegalese bean export sector has also been characterized by increased vertical integration although to a lesser extent. In this sector, increasing standards have prompted a shift from smallholder contract-farming to vertically integrated estate production by the exporting companies themselves. It is estimated that smallholder procurement under contract decreased from 95 per cent of export produce in 1999 to 52 per cent in 2005. The change in the supply chain structure has also shifted the way that local households benefit. These benefits are increasingly through agro-industrial employment and labour market effects rather than through contract farming and product market effects.

In the bean sector, both participation in contract farming and participation in agro-industrial employment have resulted in significantly higher incomes (see Figure D.10). It is estimated that contracting within the export sector leads to incomes that are 110 per cent higher than the average income in the region, while for employment in the export industry this is 60 per cent. It is important to emphasize that the shift in the supply chain structure, with increased agro-industrial production, has resulted in a stronger poverty-alleviating effect. This is because the poorest households, with less land and non-land asset holdings and a lower level of education, mainly benefit through labour market effects and agro-industrial employment.

Figure D.8: Comparison of household income in Senegal, by employment status in the tomato export industry

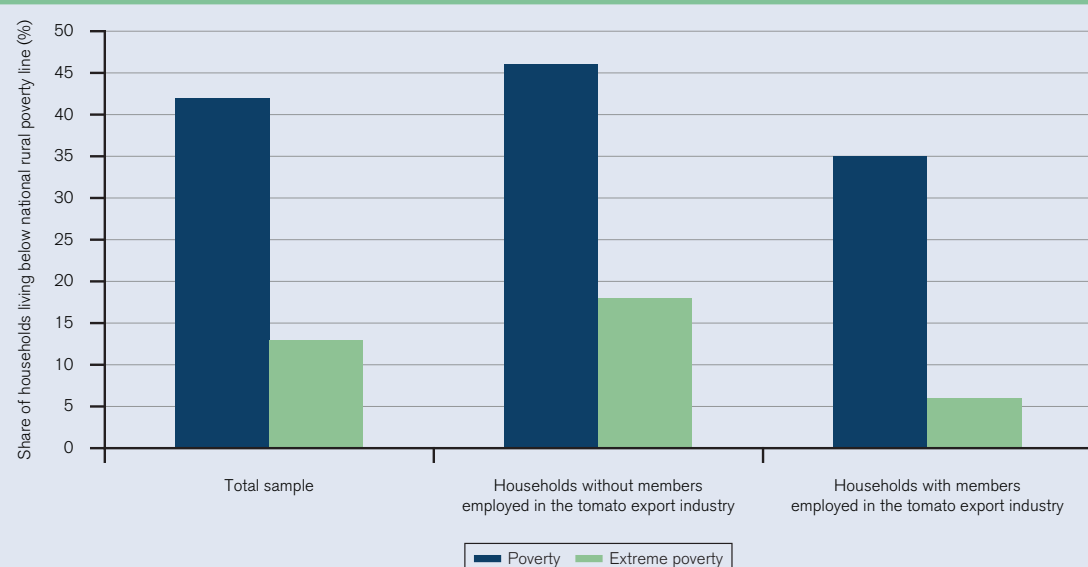


Source: Maertens and Swinnen (2011).

Note: "Total sample" refers to 299 households in 18 villages in two rural communities (Gandon and Ross Bethio).

*CFA stands for "Communautés Financières d'Afrique" ("African Financial Community").

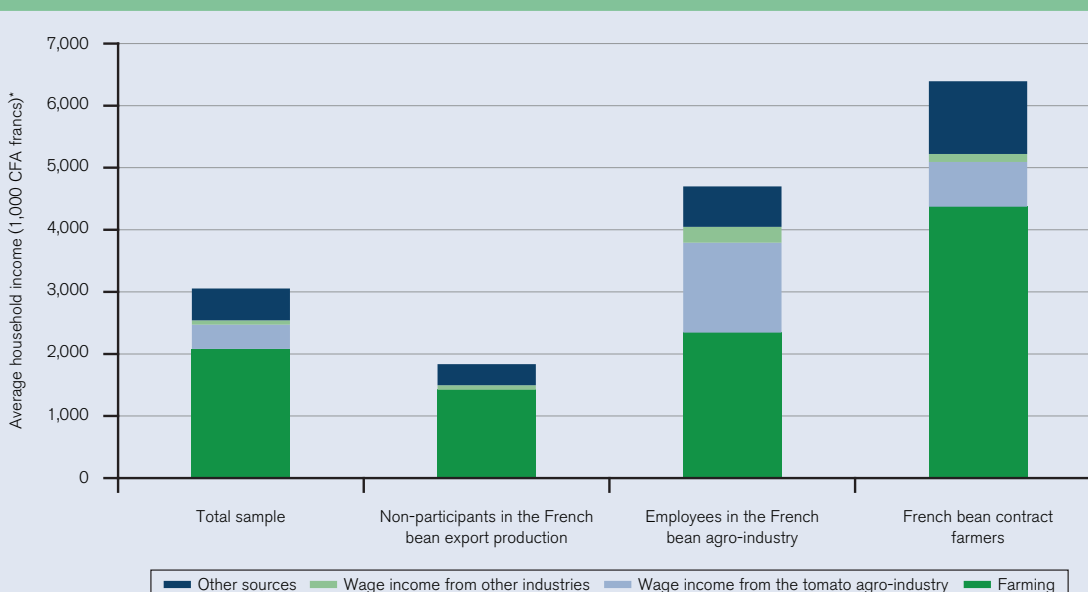
Figure D.9: Comparison of household poverty in Senegal, by employment status in the tomato export industry



Source: Maertens et al. (2011).

Note: "Total sample" refers to 299 households in 18 villages in two rural communities (Gandon and Ross Bethio).

Figure D.10: Comparison of household income in Senegal, by employment status in the French bean export industry



Source: Maertens and Swinnen (2009).

Notes: "Total sample" refers to 300 households in 15 villages in three rural communities (Sangalkam, Diender, and Noto).

*CFA stands for "Communautés Financières d'Afrique" ("African Financial Community").

When comparing employees in certified and non-certified export companies, employees in certified companies are found to reap greater rewards. Certification to GlobalGAP is found to increase the length of companies' export season, which results in longer employment periods for workers in certified companies. In addition, workers in certified companies receive slightly higher wages than workers in non-certified companies.

Moreover, employees in the export sector invest the wage earned in the export companies at least partially in their own farms. Access to wages from the export sector therefore has a positive effect on farm intensification and leads to increased use of modern inputs, such as mineral fertilizer and improved seeds.

Table D.2: Product composition of LDCs' exports by destination, 2000–12
 (US\$ billion and per cent)

	Value	Share in LDC exports		Annual percentage change		
	2012	2000	2012	2011	2012	2000–12
Agriculture						
World	21	100	100	26	2	11
Asia	8.2	30	39	27	6	13
Africa ^a	4.8	16	23	34	4	14
Europe	4.5	37	22	26	-9	6
Middle East	1.9	7	9	25	-8	13
North America	0.6	7	3	13	5	2
Commonwealth of Independent States (CIS)	0.4	0	2	64	5	27
South and Central America	0.1	1	0	0	-11	3

Source: WTO, 2013a.

 Table D.3: LDCs' agriculture exports by destination, 2000–12
 (US\$ billion and per cent)

	Value	Share in LDC exports		Annual percentage change		
	2012	2000	2012	2011	2012	2000–12
World	21	100	100	26	2	11
Developed economies	6.5	51	31	20	1	6
G-20 developing economies	4.6	19	22	41	-1	12
Other developing economies	7.8	24	37	25	5	15
LDCs	2.2	6	11	19	2	16

Source: WTO Secretariat estimations.

retail chains or producers of final consumption goods try to coordinate production processes within value chains from the top, imposing, for instance, requirements regarding costs, quality, delivery, product variety and quality systems. This has led to increased levels of vertical integration within the value chain.

Increasing flows of FDI across the globe have allowed multinational retailers or food companies to invest directly in the countries where the raw product is produced. Worldwide inflows of FDI increased from USD 54 billion in 1980 to USD 1,350 billion in 2012 (Maertens and Swinnen, 2014). While there are no global data on FDI targeted at the agri-food sector, there are strong indications that the agri-food sector has taken advantage of these increases. According to United Nations Conference on Trade and Development (UNCTAD) (2012), about 6 per cent of total world FDI flows in 2012 were realized in the food processing sector. Within the manufacturing sector, the largest increases of FDI flows during the most recent years have been observed in the food and beverage sector. In Africa, about 20 per cent of FDI inflows in the manufacturing sector – or 6 per cent of total FDI inflows – are in the food and beverage sector. In Latin America and the Caribbean, the food industry represents 30 per cent of FDI in manufacturing or 11 per cent of total FDI inflows (UNCTAD, 2012).

Increased FDI inflows, the increasing role of standards within value chains and increased levels of vertical integration within those chains have together probably contributed to an increased level of technological transfers to developing country producers that are integrated in those chains. Such technological transfers can represent important contributions to productivity increases in the agricultural sector and resulting poverty-reducing effects. These new production structures, however, can also lead to situations of “capture”, whereby lead firms in the value chain use their dominant position to appropriate most of the gains generated within the chain (see also Section C). It is, therefore, important for developing country exporters to adjust to these new structures and processes applied in agricultural value chains.

(c) The changing nature of agricultural trade

The changes in agricultural trade described above have impacted developing countries in different ways depending notably on their competitive position. Some countries have managed to enter the growing processed food market while others have increased their contribution to the growing fresh fruit and vegetable segment. For many net importers of food, however, rising food prices have represented a challenge rather than an opportunity.

Box D.3: Categories of agricultural exports

The classification used in this report is inspired by the discussion of development strategies: processing or new products. According to our classification, there are two dimensions of agricultural product classification. The first one is based on the stage of processing (raw vs. processed). The second one is based on the type of product: traditional, fruit and vegetables (including nuts), specialties, and others. Processed agricultural goods, fresh fruit and vegetables, and specialty products are typically considered to represent relatively high value added products.

Table D.4 reflects the allocation of agricultural product groups into the categories used in this section. Whenever the terms traditional, specialties or fresh fruit and vegetables are used alone, they only refer to the raw products within this category. Whenever the term “processed” agricultural goods is used alone, it refers to all the processed product lines identified in the right-hand column.

The differentiation between the segments of fresh fruit and vegetables, specialties and processed goods used in this section has been inspired by the FAO (2004) study on non-traditional agricultural exports. FAO data on trade flows, however, do not include information on cut flowers and on fish. These two product groups are therefore only included in this section when WTO trade data or WTO tariff data are used.

The definition of the category “processed agricultural goods” is consistent with the definition used in the study by Liapis (2011) on processed agricultural exports. The classification used in this section is consistent with the one used in WTO (2008), but is broader as it covers product lines not included in the discussion of tariff escalation in that document.¹⁴ More generally, the definition of “agricultural products” used in this section is also broader than the one applied in the WTO Agreement on Agriculture, which does not cover, for instance, fish, fish products, rubber and wood.

Last but not least, the categories used in Maertens and Swinnen (2014) differ from the ones used here. Their “tropical and temperate” agricultural exports category is close to “traditional exports” in the table above. The “high value” products group in Maertens and Swinnen (2014) includes fruit, vegetables, meat and meat products, milk and dairy products.

Table D.4: Agricultural goods classification

	Raw	Processed
Traditional	Cereals Beverages Raw materials Banana and citrus Oilseeds	Processed cereals Processed beverages Processed raw materials Processed citrus Processed oilseeds Sugar
Specialties	Spices Cut flowers Other live plants	Processed spices
Fruits, vegetables and nuts	Fresh fruits Fresh vegetables Nuts	Processed fruits Processed vegetables Processed nuts
Others	Live animals	Meat Milk product Animal products Fish Prepared meat and fish Water Alcohol Processed others

(i) *Emerging economies and the exports of processed products*

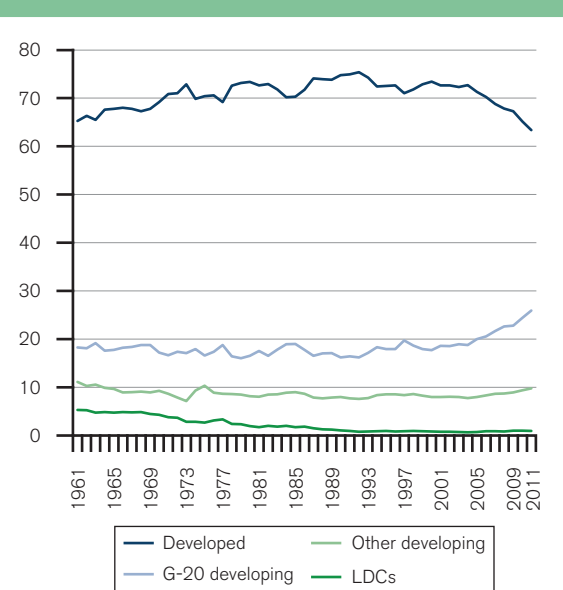
Industrialized countries are the dominant players in agricultural markets and have been so for the past 50 years. Their share in global exports increased steadily between the early 1960s and 1990. In the early 1990s, however, they started to lose market share, and developing countries have increased their share in world agricultural trade from 30 per cent to around 40 per cent in recent years. Figure D.11, however, illustrates that the share of developing countries in global agricultural trade was only slightly higher in 2011 (37 per cent) than it was in the early 1960s (35 per cent). It also shows that the increased market share of developing countries in recent years mainly reflects the increased role of emerging economies' exporters (i.e. developing countries that are members of the G-20) and to a lesser extent growth in other developing countries. LDCs

have experienced a constant decline in their share of global agricultural exports.

In the light of the discussions above on the role of different market segments, it is interesting to highlight that G-20 developing countries notably managed to increase their market share in the growing processed goods segment. Figures D.12 and D.13 reflect exports in traditional agricultural products and in fruit and vegetables for different country groupings. The left-hand panels reflect exports in raw products and the right-hand panels reflect exports in processed products. The figures illustrate that, in the last decade, G-20 developing countries have expanded their share in global markets in all four market segments depicted below.¹⁵

G-20 developing countries and – to a lesser extent – other developing economies have also increased their role in “other

Figure D.11: The share of developing countries' and LDCs' agricultural exports in world agricultural exports, percentages, 1961–2011



Source: WTO Secretariat calculations based on FAO data.

prominent export products. Among the top items for LDC exports, agricultural products rank significantly behind a number of fuel and mining and textile products. Fish and crustaceans are in eighth place; coffee, tea, mate and spices are in ninth position; and cotton is tenth (WTO, 2013a).

In recent years, high value-added product segments have played an increasingly important role in LDC agricultural exports. Figure D.14 illustrates that the share of traditional agricultural exports has dropped by around ten percentage points in the last decade. LDCs have managed to move increasingly into exporting processed agricultural goods and fresh fruits, vegetables and nuts. It nevertheless continues to be the case that the share of these segments in total exports is lower in LDC exports than in global export, reflecting that their revealed comparative advantage continues to be in traditional agricultural exports.

(iii) *Agricultural exports and their changing weight in developing countries' GDP*

In G-20 developing countries, agricultural exports represent a lower proportion of the economy than in LDCs or in other developing countries.

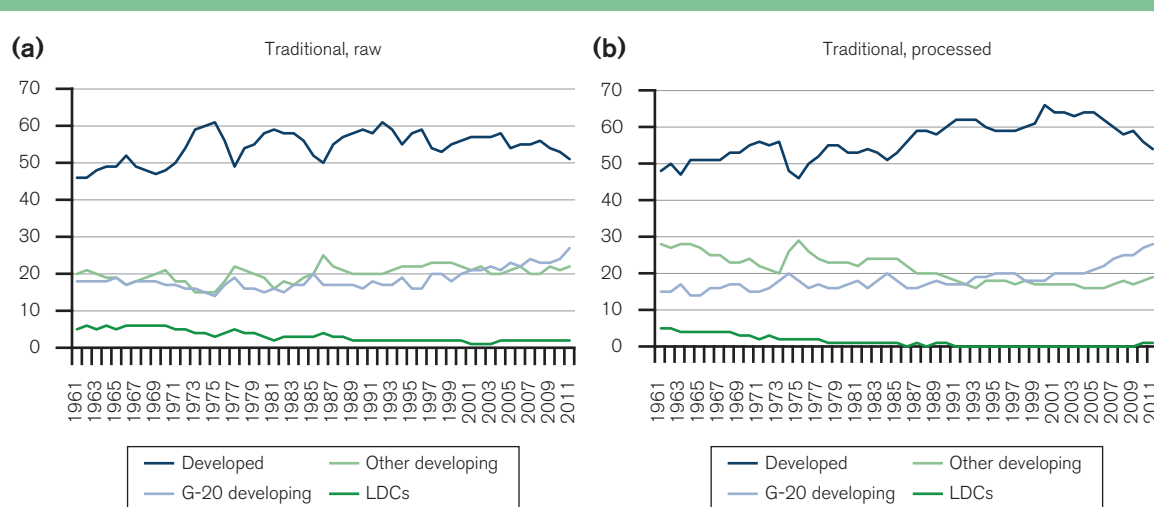
processed goods" – a segment that notably includes poultry and dairy products. This market segment, however, continues to be largely dominated by developed economies that together hold around 70 per cent of the share of global exports.

(ii) *The share of high value-added products in LDC agricultural exports*

Traditional raw agricultural products represent an important export item for LDCs, with beverages and cotton being

Figure D.15 shows that agricultural exports as a share of GDP make up only around 3 per cent in G-20 developing countries, while they stand at around 7 per cent for other developing economies. The sharp price increases in agricultural products have, on average, not been accompanied by an increased role of agricultural exports in GDP. Only emerging economies have seen the weight of agriculture increase in the recent period of high prices. One of the reasons for this is that many developing countries are also exporters of fuels and mining products.

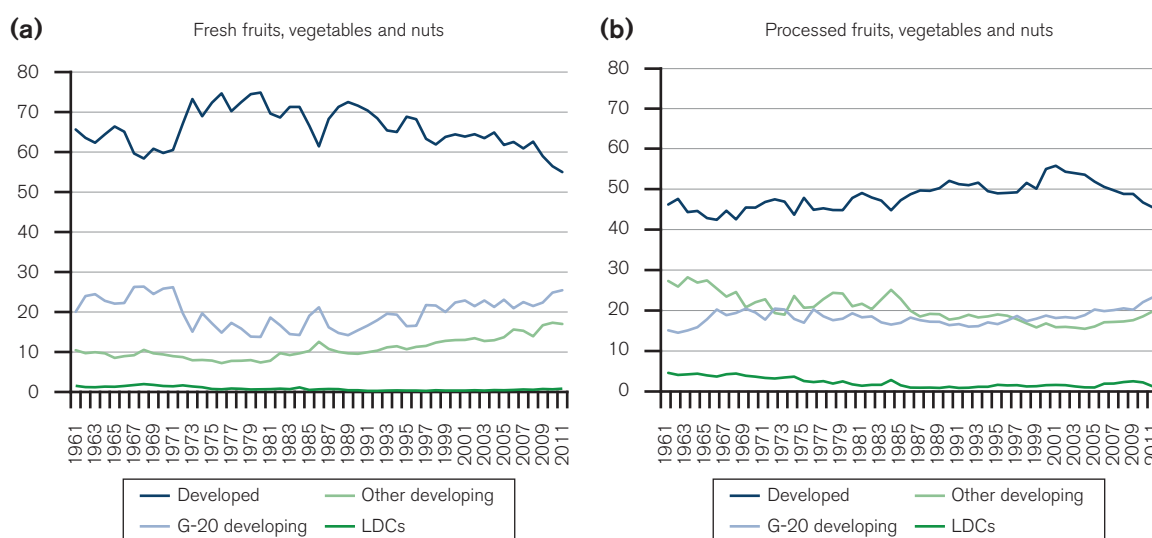
Figure D.12: Share of different country groups (income groups) in traditional agricultural exports, 1961–2011 (per cent)



Source: WTO Secretariat calculations based on FAO data.

Note: In these figures, "G-20 developing countries" indicates developing country members of the G-20 (as defined in Appendix Table B.1).

Figure D.13: Share of different country groups (income groups) in the exports of fruit and vegetables, 1961–2011 (per cent)



Source: WTO Secretariat calculations based on FAO data.

Note: In these figures, “G-20 developing countries” indicates developing country members of the G-20 (as defined in Appendix Table B.1).

In LDCs, for instance, export growth in fuels and mining products were twice as high as those of agricultural goods (WTO, 2013a).¹⁶ As a result, the overall share of agricultural goods in LDC exports went down from 21.1 per cent in 2000 to 9.7 per cent in 2012.

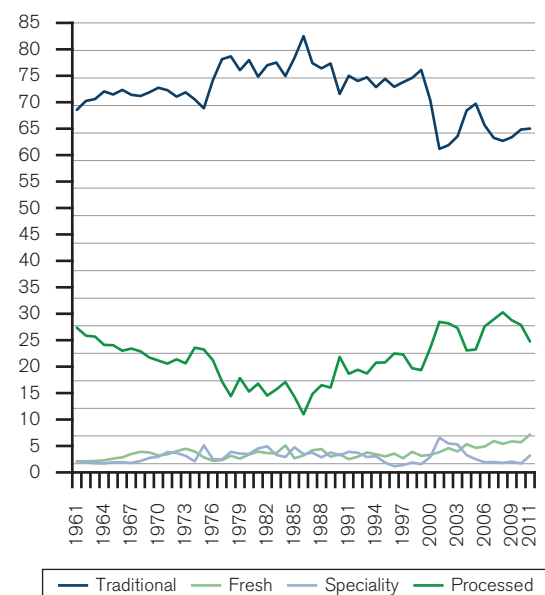
(iv) LDCs and increasing prices of food imports

Price volatility is a particular challenge for net food importers. As a group, LDCs import more agricultural goods in absolute value than they export, and most LDCs are net food-importing countries (Cheong et al., 2013). Ng and Aksoy (2008), however, highlight that countries with larger food deficits tend to be either oil exporters or countries in conflict.¹⁷

Figure D.16 illustrates that the gap between the value of imports and the value of exports of food has increased over time in LDCs. This is in line with findings in Ng and Aksoy (2010b), who find that trade deficits increased in low-income countries over the period 2000–07.¹⁸ In middle-income countries, on the other hand, food exports increased more than food imports over the same period. These findings are in line with the evidence presented above that emerging economies and “other developing countries” have been more successful than LDCs in taking advantage of the agricultural price boom.

Food represents a high share of spending for poor households, which typically cannot further reduce the quantities they consume (low price elasticity). Price hikes therefore hit poor households particularly hard (FAO,

Figure D.14: Share of different agricultural market segments in LDC exports, 1961–2011 (per cent)



Source: WTO Secretariat calculations based on FAO data.

Note: For definition of product segments, see Table D.2.

2011 a), and there is evidence that price hikes affect the food intake of the poor.¹⁹ The ILO (2011) reports that, in most developing countries, the poorest households (those in the lowest income quintile) spend more than 60 per cent of their income on food, according to a sample

Figure D.15: Agricultural exports as ratio of GDP in developing countries, 2000–12

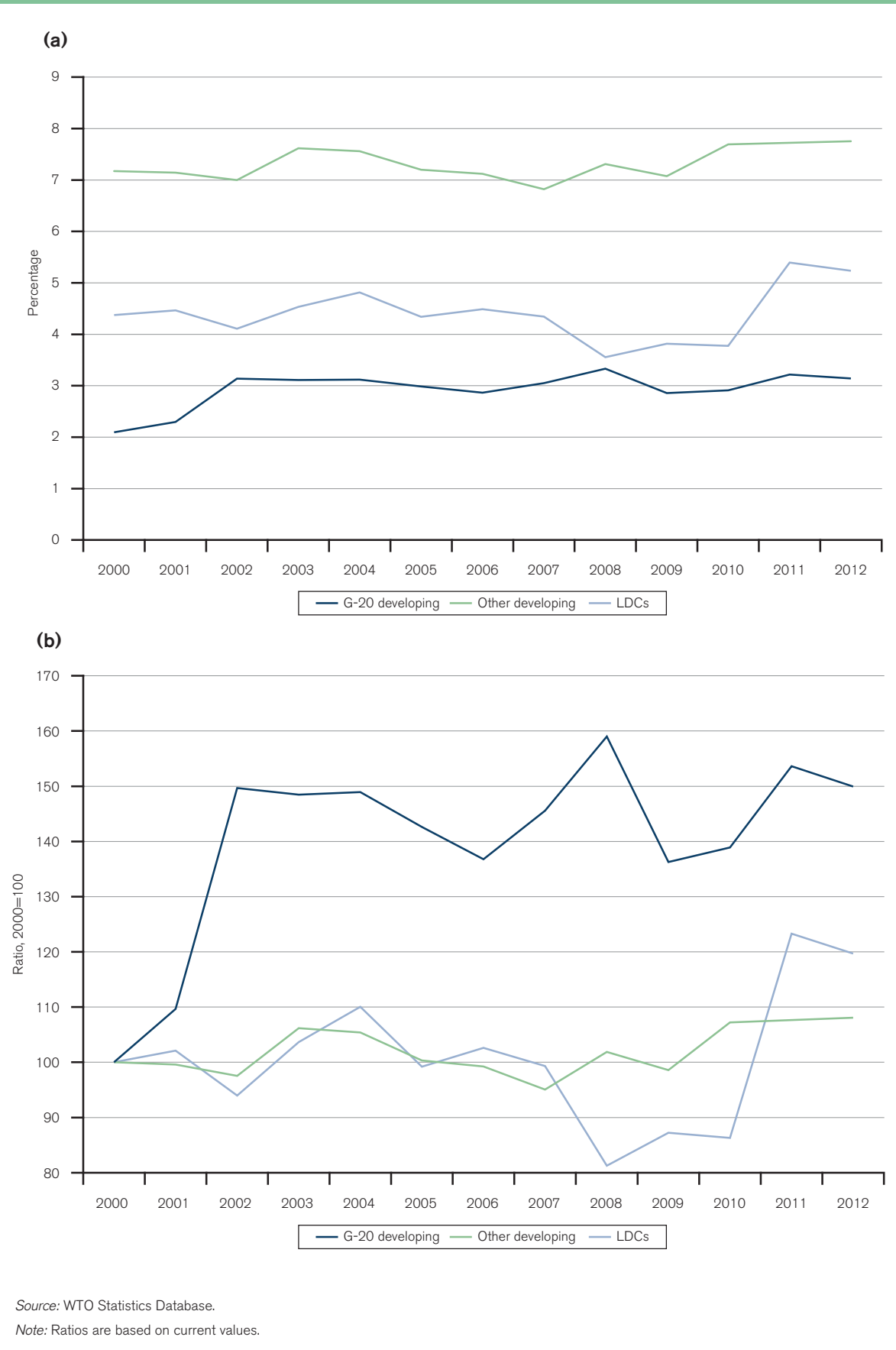
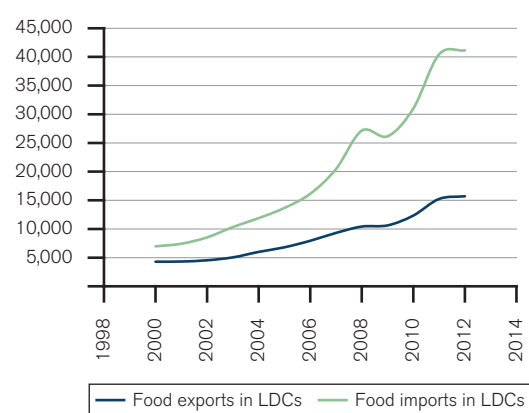


Figure D.16: Food exports and imports in LDCs, 2000–12
(US\$ million, current prices)



Source: WTO Secretariat.

of 72 developing countries. The World Bank (2011) has estimated that rises in food prices between June and December 2010 pushed an additional 44 million people below the US\$ 1.25 a day poverty line. This is despite the fact that the high food prices experienced in international markets have probably not been fully reflected in the domestic markets of many developing countries (Ng and Aksoy, 2010a).

3. Making agricultural trade work for development: the policy environment

Given the importance of the agricultural sector for poverty reduction and given the increasing importance of international trade for agricultural activity, the policy and institutional environment governing agricultural trade has important impacts on developing countries' development strategies. Indeed, the agricultural sector is much more likely to contribute positively to growth within a sound policy environment and with high-quality institutions (Mehlum et al., 2006). This is the case for both net exporters and net importers. In the next section, five policy areas will be discussed that affect the role agriculture can play in development strategies:

- productivity gap – where significant productivity gaps exist, developing country producers may find it hard to maintain existing production levels or to grow through exports when markets are open
- price-based policy measures, such as tariffs and subsidies – these have been frequently used in the agricultural sector and may continue to affect developing country exporters
- trade-related fixed costs, such as those related to implementing sanitary and phytosanitary (SPS)

measures, present a particular challenge to producers in developing countries

- value chains in the agricultural sector – these chains are characterized by market concentration, creating problems in particular for small producers in developing countries
- prices in the agricultural sector – these are notoriously volatile, creating difficulties for resource-constrained consumers and for producers needing to take investment decisions.

(a) Overcoming productivity gaps

Investments in agricultural research and development (R&D) have turned the agricultural sector into a dynamic sector with rapid technological change in much of the world, including in developing countries (World Bank, 2007). It is therefore more important than ever for developing countries to “apply knowledge to nature”²⁰ – i.e. to promote scientific research, education and training in the agricultural sector in order to enhance crop, soil, water and livestock management and to develop more sustainable and resilient agricultural systems (Wood, 2003; World Bank, 2007).

In numerous countries, productivity growth in agriculture has contributed to economic growth, beginning in the early 1990s, as reflected in Table D.5.²¹ In a number of emerging economies, notably Brazil and China, agricultural total factor productivity (TFP) growth has been particularly high. Both Brazil and China have also been able to increase their market share in global agricultural exports. Other middle-income countries – particularly Argentina, India, Iran, Nigeria and Russia – also worked towards increasing agricultural productivity and significantly increased their spending on public agricultural R&D in the 1990s (Fuglie and Nin-Pratt, 2012; World Bank, 2007).

Another factor likely to have affected agricultural productivity and export trends, notably in the 2000s, is FDI. Recent reports suggest that increased global food prices have significantly affected investment interests (e.g. Deininger et al., 2011).²² Reports by UNCTAD (2013b) also reflect an increased interest in agriculture as a sector for FDI. In Africa, a survey among investment promotion agencies identified agriculture as the most promising sector for attracting FDI. Similarly in Asia, agriculture (including forestry and fishing) was the second most promising sector for attracting FDI, behind the food industry, which was ranked number one among potential FDI interest. However, FDI may be affected negatively by possible future downturns in food prices. Indeed, there is evidence that land acquisitions peaked in 2009 when food prices peaked and returned to more moderate levels afterwards (Arezki et al., 2011).

The rates of return on agricultural R&D are notoriously high (World Bank, 2007), with R&D arguably being the single most

Table D.5: TFP growth in agriculture and export share, by region and decade, 1961–2010

Region	Agricultural TFP growth (annual %)					Average share in world agricultural exports (%)				
	1961–70	1971–80	1981–90	1991–2000	2001–09	1961–70	1971–80	1981–90	1991–2000	2001–09
Selected developing countries (by region)										
Sub-Saharan Africa	0.2	–0.1	0.8	1.0	0.5	10.0	5.0	3.1	2.2	2.0
Latin America and Caribbean	0.8	1.2	1.0	2.3	2.7	13.9	13.5	12.3	10.6	13.1
Brazil	0.2	0.5	3.0	2.6	4.0	3.3	4.1	3.7	3.1	4.8
Asia (except West Asia)	0.9	1.2	1.4	2.7	2.8	11.9	9.6	10.8	11.6	13.1
China	0.9	0.7	1.7	4.1	3.1	2.5	2.4	3.7	4.5	3.8
India	0.5	1.0	1.3	1.1	2.1	1.6	1.2	1.0	1.1	1.6
West Asia and North Africa	1.4	1.7	1.6	1.7	1.9	4.4	3.1	2.5	2.5	2.7
World	0.2	0.6	0.6	1.7	1.8	100.0	100.0	100.0	100.0	100.0

Source: Fuglie (2012) and FAO. Compositions of regional groupings are based on Fuglie (2012).

important contributor to increases in total factor productivity and thus competitiveness in developing countries (Fuglie, 2010). Yet, it is notoriously difficult to attract private funding into agricultural R&D because of the difficulty for investors to benefit from relevant investments (World Bank, 2007). One reason for this is that many technologies of importance to poor farmers cannot be protected cost-effectively by intellectual property rights (IPRs). Public investment in agricultural R&D therefore remains crucial, in particular in developing countries. Yet, agricultural investments are risky and tend to show their benefits only in the long term, i.e. after ten years or more (World Bank, 2007). This may be one of the reasons why it is not necessarily easy to gather policy support for agricultural R&D investment, even in periods of high agricultural prices.

Efforts to stimulate private investments in agricultural R&D could take the form of strengthening the investment climate for private investors in general, facilitating access to information for potential private investors and addressing credit constraints that smallholders may face when considering an investment in R&D. Producer organizations or public-private partnerships can play an important role in searching for, developing and diffusing new technology options.²³ On the trade policy side, the lowering of barriers to the importing of new technologies could also contribute to fostering private investments in agricultural R&D (World Bank, 2007).

While increased R&D spending is likely to affect the agricultural sector positively, R&D and resulting productivity increases are unlikely to affect all farmers equally. It has been argued that large-scale developing country farmers are more likely than subsistence farmers to gain from this (Pray et al., 2007). The overall economic effects of such productivity increases are nevertheless likely to be significant. Cheong and Jansen (2013), for instance, highlight, the possible contribution of increases in agricultural productivity to decreasing informal urban employment.

(b) Price-based policy interventions

Price-based measures have traditionally been quite prominently used in global agricultural markets and have most likely played a role in determining agricultural trade patterns. The phenomenon of tariff escalation – the practice of imposing higher import duties on semi-processed and finished products than on raw materials – has often been raised in the debate about the difficulties that developing countries face to move into processed agricultural exports. Another price-based measure that has mainly been used by industrialized economies is export or producer subsidies.

(i) Tariffs

It has been illustrated above that emerging economies have been significantly more successful than poorer developing countries, notably LDCs, in taking advantage of high prices in the agricultural sector. They have also been more successful in moving away from traditional agricultural exports of raw commodities and into processed exports.

Table D.6 illustrates unweighted average applied tariffs that countries of different income groups face in partner countries, broken down according to the market segments described in Box D.3.

LDC exports tend to face lower tariffs than exports from other developing countries, in particular for exports destined for industrialized economies. Average weighted tariffs imposed by developed countries on LDC agricultural exports decreased from 3.6 per cent in 2000 to 1.0 per cent in 2011.²⁴ The preference accorded to LDCs is significant in the agricultural sector as developing countries faced an average tariff of 9.2 per cent in 2000 and of 7.2 per cent in 2011. Regarding tariff escalation, the tariff pattern faced by LDCs does not differ significantly from the pattern faced

Table D.6: Tariffs on exports by partner country, product segment and processing stage, 2011 (per cent)

(a) LDC exports								
	Traditional products		Fruit and vegetables		Specialty products		Others	
	Raw	Processed	Raw	Processed	Raw	Processed	Raw	Processed
Developed	0.35	0.63	0.11	0.52	0.00	0.06	0.00	0.00
Emerging	18.83	22.47	21.33	15.37	7.76	10.49	9.52	8.60
Other developing	13.60	8.04	10.34	8.82	5.89	8.97	10.64	7.11
LDCs	18.69	16.99	20.10	21.27	16.60	17.38	17.95	11.22
(b) Other developing economies' exports								
	Traditional products		Fruit and vegetables		Specialty products		Others	
	Raw	Processed	Raw	Processed	Raw	Processed	Raw	Processed
Developed	0.37	0.78	0.21	0.42	0.00	0.02	0.08	0.00
Emerging	18.95	27.45	17.06	14.87	8.51	9.98	12.81	9.85
Other developing	12.99	8.86	12.03	10.92	9.12	9.69	13.94	6.10
LDCs	17.82	14.99	19.82	19.25	15.29	15.17	17.14	9.38
(c) Emerging economies' exports								
	Traditional products		Fruit and vegetables		Specialty products		Others	
	Raw	Processed	Raw	Processed	Raw	Processed	Raw	Processed
Developed	0.39	0.76	0.30	0.37	0.00	0.03	0.16	0.12
Emerging	18.54	31.56	16.85	13.11	7.84	10.36	12.86	12.41
Other developing	12.20	8.01	11.57	10.18	8.77	9.57	12.93	5.25
LDCs	18.21	14.35	19.69	19.98	15.94	17.04	16.75	9.22
(d) Developed economies' exports								
	Traditional products		Fruit and vegetables		Specialty products		Others	
	Raw	Processed	Raw	Processed	Raw	Processed	Raw	Processed
Developed	0.85	1.01	0.52	0.65	0.00	0.03	0.18	0.00
Emerging	20.50	35.25	16.21	13.11	7.51	10.38	15.80	12.22
Other developing	12.87	8.95	12.18	15.82	9.13	11.21	15.49	6.91
LDCs	16.84	12.67	18.96	20.03	13.96	13.92	16.83	8.39

Source: WTO Tariff Data Base.

Note: Unweighted averages of most-favoured nation (MFN) applied tariffs are used. For LDC exports, LDC preferential tariffs are taken into account.

by other developing countries. In general, tariff escalation is rather low for exports to developed economies.

Tariffs on agricultural goods are, however, often higher than tariffs on other goods. The WTO (2013b), for instance, finds that, in developing countries, the average duty applied on agricultural imports from LDCs was above 12 per cent in 2011. This is significantly higher than the average duty applied to oil or minerals (close to zero) and to non-agricultural products (around 2 per cent).

(ii) Production and export subsidies

Historically, policy regimes tended to have a pro-agricultural bias in high-income countries and an anti-agricultural bias in developing countries (Anderson et al., 2013). This reflects a general tendency of countries to gradually move in the course of their economic development from taxing to

subsidizing agriculture. Subsidies have been prominently used in the agricultural sector, in particular by industrialized countries. However, since the 1980s, the relative rate of assistance (RRA) in both developed and developing economies has on average converged towards zero.²⁵ A significant anti-agricultural bias nevertheless continued to exist over the 2005-10 period in Côte d'Ivoire, Zimbabwe, Nicaragua, Ecuador, Argentina, Bangladesh, Egypt, Sri Lanka, Uganda and Mozambique.²⁶ The pro-agricultural bias was highest in Japan, Iceland, the Republic of Korea, Norway and Switzerland.²⁷

Support differs significantly across products, and individual export products continue to receive significant support by individual countries (Anderson et al., 2013). Some products experience high support in almost all countries. This is notably the case for sugar, rice and milk. For other products, support is high in developed economies but

highly negative in developing countries. This is above all the case for cotton. Products experiencing relatively low support in all countries include feed grains and soybeans, pork and poultry (Anderson et al., 2013).

(c) Food standards, regulations and procedural obstacles

Standards and regulations are prominent policy tools in the agricultural sector and they are often meant to guarantee the safety of human and animal health. Information on SPS notifications to the WTO and on certification issued by GlobalGAP – Global Good Agricultural Practice, a non-governmental organization that sets voluntary standards for the certification of agricultural products – is reported in Figure D.17. It suggests that the number of standards in international food trade has increased in recent years. There also appears to be agreement that the complexity of standards has increased (Gibbon and Lazaro, 2010).

According to evidence from business surveys conducted by the International Trade Centre (ITC), agricultural exports are disproportionately affected by non-tariff measures (NTMs), such as SPS measures. In the 11 countries covered by the surveys, 53 per cent of surveyed businesses indicated that they were negatively affected by NTMs or related obstacles to trade.²⁸ This percentage was higher for businesses in the agricultural sector (60 per cent) and lower among manufacturing firms (51 per cent).

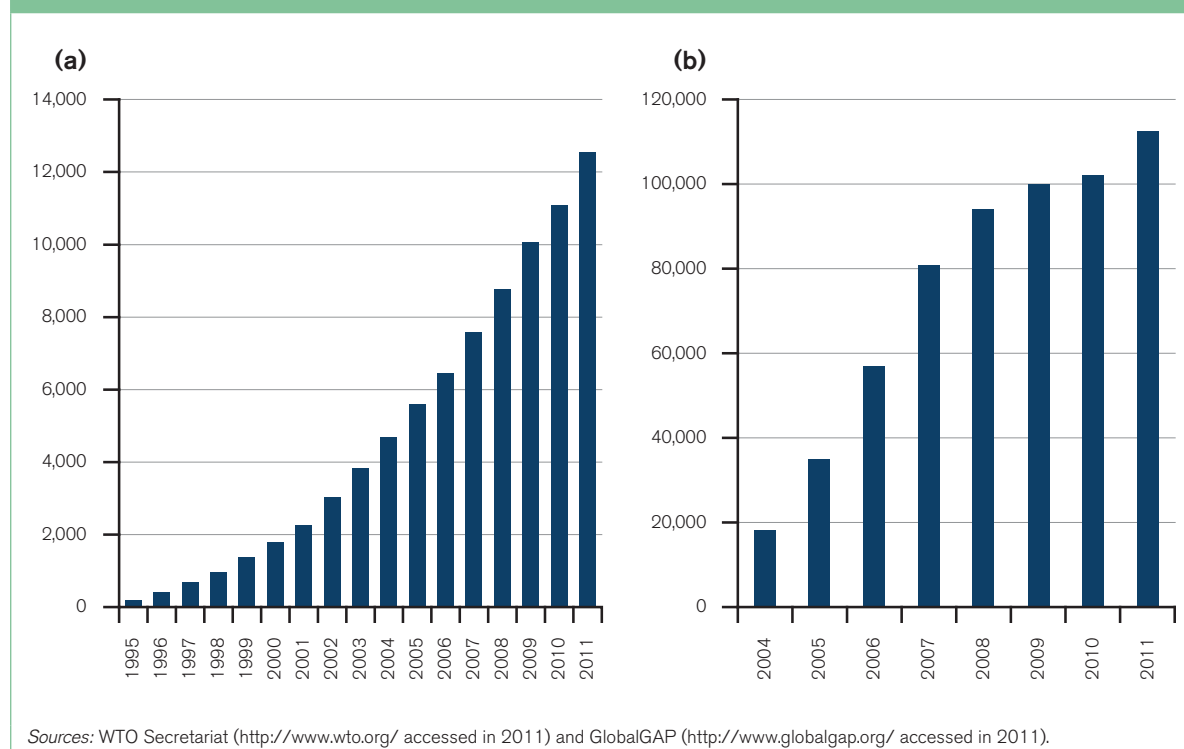
Although non-tariff measures exist to pursue valid policy objectives, they can seriously hamper trade. Costs can arise

through a variety of channels. Meeting foreign standards or regulations can, for instance, increase production costs for exporters, in particular if foreign measures differ from those applied at home (Jansen, 2010; WTO, 2005; 2012; Ferro et al., 2013). Additional costs arise from the fact that exporters often need to be able to prove that their products actually meet foreign standards. Related certification procedures can be prohibitively costly, in particular for exporters from developing countries.²⁹

Additional production and certification costs may arise both in the case of public standards or regulations and in the case of voluntary private standards. The latter can have an important influence on trade flows, in particular if they are applied by well-positioned NGOs or by major players in the distribution channels in the destination market. While the nature of the costs involved with complying with standards is by now well understood, little is known about the size of compliance costs. Only a few studies have attempted to estimate compliance costs empirically, and their estimates vary widely.³⁰

Private (voluntary) standards are developed by a number of entities, including companies, non-governmental standardizing bodies (such as regional or international bodies), certification and/or labelling schemes (e.g. the Marine Stewardship Council scheme) and sectoral associations (e.g. Florverde for flowers) (WTO, 2012) (see Box D.4). Standards tend to be set to ensure a certain level of quality or to ensure compatibility with existing standards. In markets characterized by a limited number of active purchasers,³¹ however, standards can be used to leverage the market power of purchasers (WTO, 2012).

Figure D.17: Panel (a) Number of new SPS notifications to the WTO, 1995–2011
Panel (b) Number of GlobalGAP certified producers, 2004–11



Quantitative research has shown that regulatory measures applied by OECD countries can significantly reduce developing countries' exports to OECD countries but do not necessarily affect trade between OECD members (Disdier et al., 2008). On the other hand, there is evidence that increased standards introduced through multinationals investing in developing countries may contribute to increased trade for these countries and significant poverty reduction effects (Maertens et al., 2011). Also, Kadigi et al. (2010) find positive effects of standards for the fishery sector in East Africa.

The seemingly contradictory evidence about the effects of standards on trade can be explained in the following way. Meeting a standard implies costs but adhering to higher standards may also make it easier to conquer new market segments and/or to benefit from the higher prices attached to products meeting higher standards. The lower the cost of meeting the standard and the higher the return from meeting the standards – in terms of higher sales or higher prices – the more likely it is that the benefits from adhering to standards is positive.

Existing evidence suggests that positive outcomes are more likely in cases where suppliers have a medium- to long-term relationship with their buyers. Iacovone et al. (2011) describe the advantages that Mexican suppliers have from linking up with the retailer Walmart. The retailer requests suppliers to meet certain product and process standards and to accept very competitive market prices. On the other hand, the retailer significantly decreases transaction costs for the suppliers and makes it possible for them to supply markets nationally while producing locally. Iacovone et al. (2011) show that this arrangement is very profitable for suppliers that are relatively productive and that find it relatively easy to meet standards. The direct link to the retailer thus contributes to a process that ultimately leads to increased productivity in the relevant market segment.

Similar evidence exists for cases where suppliers sell inputs into downstream production processes, notably where the buyer of the inputs is a multinational. In these cases, part of the costs of meeting higher standards is borne by the foreign multinational, which has an implicit role in transmitting new technological know-how.

In cases where the types of private sector linkages described above do not exist, technical assistance can contribute to overcoming the costs of meeting standards or to facilitating access to foreign markets for products meeting standards. Box D.5 provides an example of a relevant technical assistance project.

Another type of fixed cost that can have a significant impact on export and import flows is costs occurring at the border. Some of these costs stem from administrative processes linked to the certification of standards or regulation. Other costs simply stem from administrative or

logistical processes related to the importing or exporting of goods in general. To the extent that such processes take time, they can significantly hamper exports or imports, in particular for time-sensitive products such as fresh fruit and vegetables or flowers. The United States Agency for International Development (USAID) (2007) estimates that even for less perishable crops, such as cereals, each day of delay from harvest to market corresponds to a 0.8 per cent tariff equivalent.³² Liapis (2011) finds that measures that reduce time delays in crossing borders also have a significant effect on the export performance of processed agricultural goods. Measures reducing time spent at borders can notably take the form of computerizing relevant operations and combining this with the training of relevant staff (Kiriti, 2014).

(d) Capturing mark-ups and influencing policy-making

The presence of economies of scale in different segments of the food chain has led to situations where individual segments are dominated by a few companies, often large multinational agro-enterprises. Concentration of market power is, for instance, present at the beginning of chains where the provision of inputs, such as pesticides or seeds, is dominated by a few players. The World Bank (2007) reports that in 2004 the four top providers of agrochemicals held 60 per cent of the global market. In the case of seeds, the top four providers held 33 per cent of the market. Similar levels of concentration can be observed towards the end of the chain.

The World Bank (2007) reports that the top four international traders of coffee held a market share of 40 per cent and the top four coffee roasters a share of 45 per cent. This implies that nearly half of the coffee produced by an estimated 25 million farmers and farm workers is channelled through only four companies before reaching an estimated 500 million consumers. This reflects one reason why the share of the retail price retained by producers is often relatively small and why the revenue of producers does not necessarily move in parallel with price fluctuations at the retail end.

One way to strengthen the bargaining position of small and medium-sized suppliers within global value chains is to create producer organizations. Producer organizations can also play a role in influencing policy-making, including trade policy-making (World Bank, 2007). In many countries, smallholders only influence trade policy-making indirectly through the agricultural ministry while large landowners and agro-businesses have direct access to the trade ministries (Cheong et al., 2013). Organizations grouping together smallholders find it easier to directly influence trade policy-making. Examples even exist of efforts to create

Box D.4: Asparagus export sector in Peru³³

Peru is the largest exporter of fresh asparagus worldwide. The sector currently accounts for about 25 per cent of the country's total agricultural exports. More than 220,000 tons of asparagus are produced yearly. There is no domestic market for asparagus so 99 per cent of production is exported, of which 70 per cent is fresh produce and mainly sent to the United States and the European Union.

Asparagus exports from Peru have increased tremendously in the past decades, from 4,590 tons with a value of US\$ 6.4 million in 1993 to 134,992 tons with a value of US\$ 286.5 million in 2011 (see Figure D.18). The number of firms exporting each year has tripled, from around 40 firms at the end of the 1990s to almost 120 firms in 2006, and has stabilized at around 100 firms per year since 2006 (see Figure D.19). A variety of private standards – including GlobalGAP (Global Good Agricultural Practices), HACCP (Hazard Analysis and Critical Control Points), BRC (British Retail Consortium), LEAF (Linking Environment And Farming), IFS (International Featured Standards), GMP (Good Manufacturing Practices), SQF2000 (Safe Quality Food 2000) – have been established in the sector since the early 2000s.

With the spread of private standards, the export volumes and values have continued to increase. Yet, this does not necessarily imply that private standards have had a positive effect on export volumes. Certified firms are observed to export larger volumes and values but they were already doing so before they became certified. It is the best-performing companies that seek certification and this can be confounded with certification having an impact on the export performance of companies.³⁴

However, certification in line with private standards has had an effect on the sourcing strategies of export companies. Certified export firms currently source less from smallholder producers (1.5 per cent) than do non-certified firms (25 per cent). Before becoming certified (in 2001), instead, export firms sourced more from smallholder producers (20 per cent). The evidence reported in these studies therefore suggests that certification in line with private standards, especially production standards such as GlobalGAP, has decreased sourcing from smallholder suppliers in the case of asparagus exports from Peru (see Figures D.20 and D.21).

Figure D.18: Evolution of fresh asparagus export volumes and values, 1993–2011 (US\$ thousands and tons)

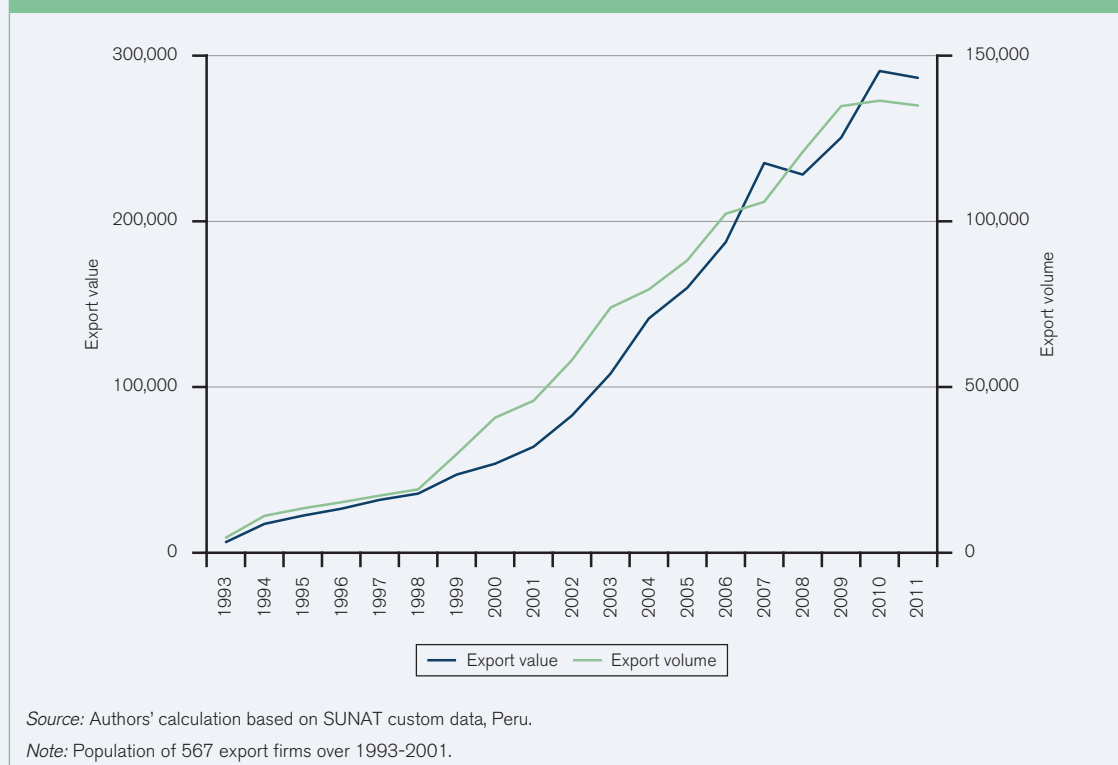


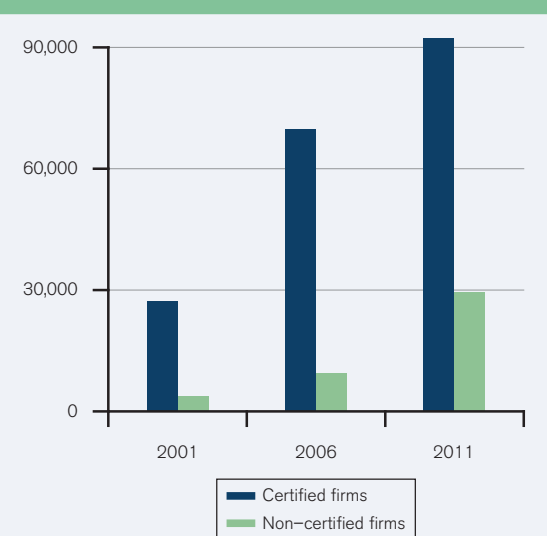
Figure D.19: Evolution of the number of certified and non-certified export firms, 1993–2011



Source: Authors' calculation based on SUNAT and survey data.

Note: Sample of 87 export firms over 1993-2011.

Figure D.20: Export volumes of currently certified and non-certified firms (tons)



Source: Authors' calculation based on SUNAT and survey data.

Note: Sample of 66 export firms exporting in 2011.

Figure D.21: Sourcing from small producers for currently certified and non-certified firms (per cent)



Source: Authors' calculation based on SUNAT and survey data.

Note: Sample of 66 export firms exporting in 2011.

alliances between trade unions and small farmers' organizations in order to strengthen the bargaining position of vulnerable populations in rural areas. An example of such an alliance – and the largest of this nature – is the Confederação dos Trabalhadores na Agricultura (CONTAG) in Brazil (ILO, 2008).

(e) Dealing with price volatility

Commodity prices are notoriously volatile, as discussed in Section D.1. Price volatility is a major challenge for both producers and consumers. For producers, it is difficult to take investment decisions in an environment of volatile

Box D.5: Access to European markets for Central American agrofood exports

Agro-food exporters in a number of Central American countries face three main challenges in connecting to global value chains, according to the Centre for the Promotion of Imports from developing countries (CBI) (2014). These challenges are to identify products with export potential, to meet relevant product standards and to establish access to the relevant supply or retail chains.

The Centre's technical assistance activities have helped to address these challenges in the following ways:

- 1) To identify products with export potential, first research was undertaken. Products with high export potential for European markets were identified as tropical fruit (including avocado, mango, pineapple, banana, rambutan and berries), processed fruits and ingredients (including fruit juice, fruit pulps and concentrates) and honey, sesame seed, peanuts and spices.
- 2) To help exporters meet relevant product standards, technical assistance was provided in the form of coaching and support for businesses and business support organizations. For the identified products with export potential, compliance with food safety protocols is typically a minimum requirement. Furthermore standards certifying sustainable production and Corporate Social Responsibility play an important role.
- 3) To help exporters establish access to the relevant supply or retail chains, assistance has focused on the development of branding and marketing strategies at the national level and supporting individual exporters in attending European trade fairs relevant for their products.

prices, in particular in the case of crops that have a relatively lengthy gestation period.³⁵ For consumers, volatile prices are above all a problem when prices are high, as was the case at the end of the 2000s. Poor households typically spend a large share of their income on food, and high food prices can have severely negative impacts on these households, as discussed above. This explains why concerns about food security were at the forefront of the political debate during the Great Recession of 2008-09, as reflected, for instance, in the establishment of the High Level Panel of Experts on Food Security and Nutrition (HLPE) as the science-policy interface of the UN Committee on World Food Security (CFS).

Different policy instruments exist to deal with price volatility. The High Level Panel of Experts on Food Security and Nutrition (HLPE) (2011) distinguishes between two types of measures that aim at reducing the impact of price volatility: measures to manage price volatility and measures to cope with price volatility. In addition, measures can be designed to work through the market and mainly private actors, through direct state interventions or through and with civil society.

Measures to cope with price volatility include emergency loan programmes for producers or consumers and social protection schemes for vulnerable households (e.g. cash and food benefits and school feeding programmes). Measures to manage price volatility include financial products (e.g. crop insurance) and investments in agriculture, notably to stabilize food production through diversification and the resilience of food systems (HLPE, 2011).

In periods of increased concern about food security, as experienced at the end of the 2000s, governments

often intervene directly in markets, with the objective of reducing prices and price volatility. Governments may, for instance, use food tariffs or taxes in a “counter-cyclical” way, which would involve decreasing taxes or tariffs when international prices increase. Such policies, however, affect governments’ budgets. Quantitative measures include the use of export restrictions. Governments that hold public stocks may consider releasing those when food prices are high.

All of these policies have the potential to affect international markets. Evidence notably suggests that if countercyclical measures are introduced jointly by net importers and net exporters, price hikes may actually be exacerbated. Indeed, if governments restrict exports in net-exporting countries and subsidize consumption in net-importing countries, this is likely to increase excess demand globally and lead to further price increases (Anderson et al., 2013). Giordani et al. (2012) have, for instance, shown that countercyclical measures in the form of export restrictions contributed significantly to the food price increases observed in 2008-10. In this context it has been argued that predictability and stability of policies are likely to be key in order for prices not to overshoot significantly in periods of price volatility (see, for instance, World Economic Forum (WEF), 2014).

4. Trade in natural resources and development: challenges and opportunities

This section begins by analysing recent trends in trade in natural resources. It highlights that it increased significantly in volume terms, and even more significantly in value terms, between 2000 and 2008 and then again after the 2008

slump. The share of fuel and mining products in global manufacturing exports has increased therefore, especially in regions such as Sub-Saharan Africa and Latin America and the Caribbean.

Countries in these regions have experienced noticeable economic growth during the years of sustained resource price increases. The question is, however, whether resource-based growth can be sustained and translated into positive development outcomes. A series of policies can potentially underpin resource-based development. These are analysed in the second part of the section and include policies to harness windfall revenues, diversification policies, FDI policies, and policies to address social and environmental concerns.

(a) Trade in natural resources: recent trends

Trade in natural resources increased significantly between 2000 and 2010, notwithstanding the slump in 2008, as shown in Figure D.22. Trade rose not only in value terms (an unsurprising result, given large price increases up to the 2008 crisis) but also in terms of volume.

Mostly because of rising prices (at least until 2008), the share of fuels and mining products in world merchandise exports increased from 13.2 per cent in 2000 to 22.7 per cent in 2012. Manufactured goods still make up the bulk of world merchandise exports but their share decreased from 72.5 per cent in 2000 to 62.4 per cent in 2012 (see Figure D.23).

Dobbs et al. (2013a) define “resource-driven countries” as those economies where the oil, gas and mineral

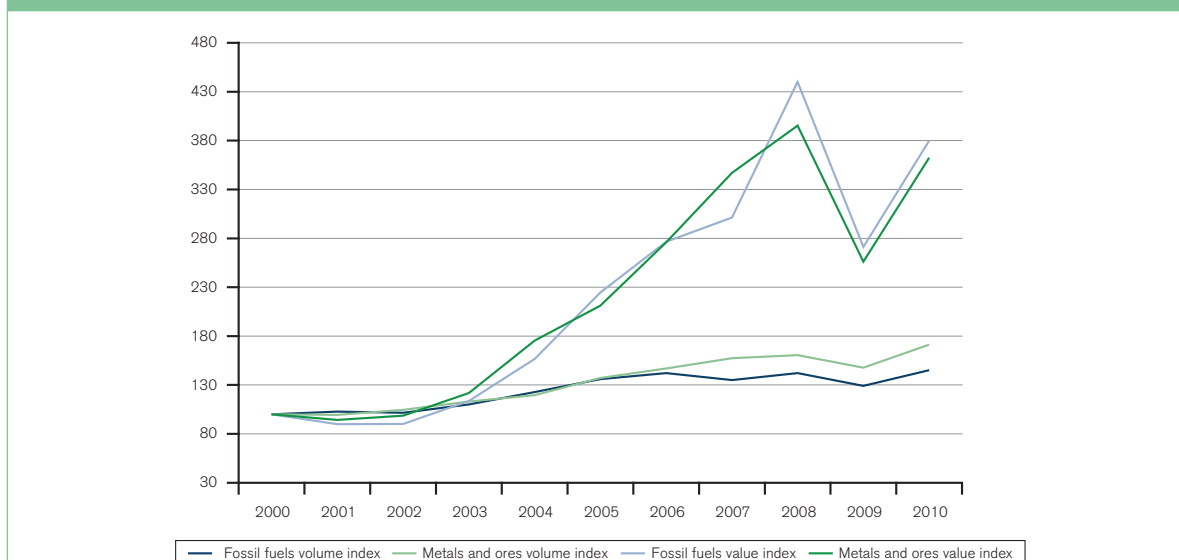
sectors play a dominant role, using three criteria: (1) resources account for more than 20 per cent of exports; (2) resources generate more than 20 per cent of fiscal revenue; or (3) resource income is more than 10 per cent of economic output. According to their estimates, the number of resource-driven countries increased from 58 in 1995 (representing a share of 18 per cent of global GDP) to 81 in 2011 (with a share of 26 per cent of global GDP). In regions such as Sub-Saharan Africa and Latin America and the Caribbean, the share of fuels and mining products in total merchandise exports increased significantly (see Figure D.24).

For countries and regions with high shares of natural resources in exports, fiscal revenue or economic output, the question is whether specialization in natural resource sectors can be an engine of growth and development.

(b) Can the “natural resource curse” be made history?

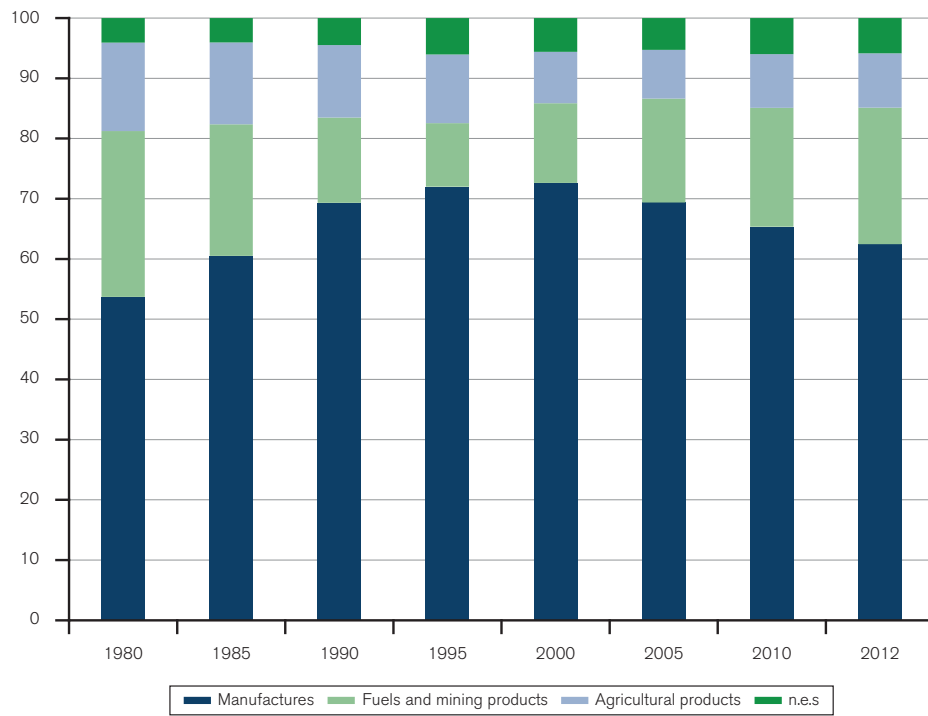
The idea that there is a “natural resource curse” is common. The WTO (2010) identifies three transmission channels for the resource curse: (1) the “Dutch disease”; (2) adverse effects on institutional determinants of growth; and (3) civil conflict. First, the Dutch disease occurs when an increase in revenues from natural resources de-industrializes a nation’s economy by raising the real exchange rate, making the manufacturing sector less competitive. Secondly, resource dominance may hamper growth in the presence of weak institutions, such as badly defined property rights, poorly functioning legal systems, and weak rule of law, or it may itself contribute

Figure D.22: Global trade in fossil fuels and metals and ores, volume indexes and value indexes (2000=100), 2000–10 (million tonnes and US\$ billion)



Source: Chatham House Resource Trade Database.

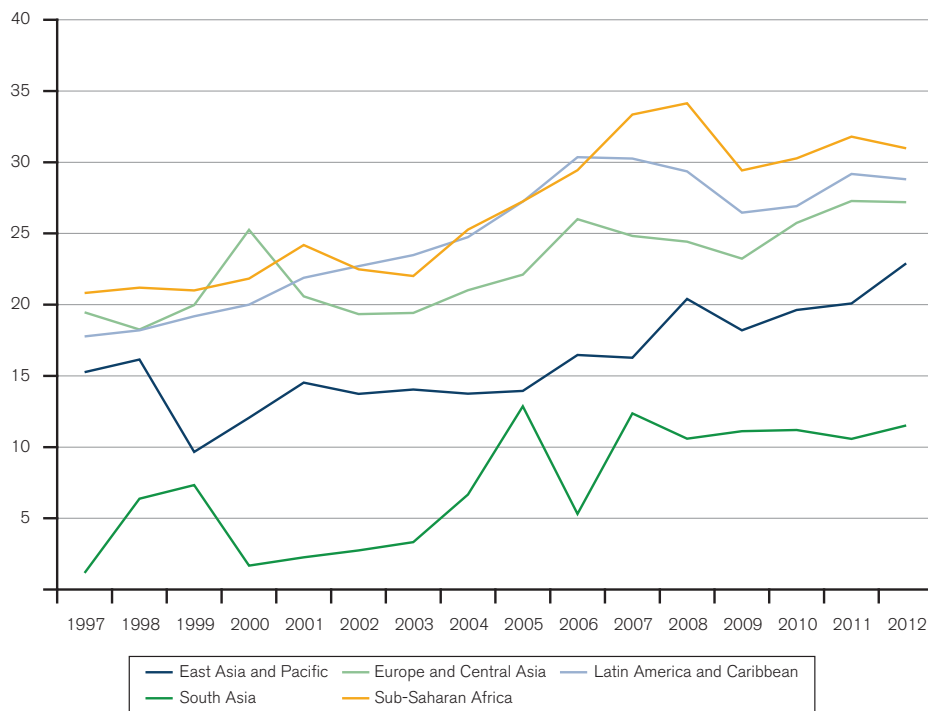
Figure D.23: Share of product groups in world merchandise exports, 1980–2012 (per cent)



Source: WTO Statistics Database.

Note: "n.e.s." stands for "not elsewhere specified".

Figure D.24: Share of fuels and mining products in total merchandise exports, averages by region, 1997–2012 (per cent)



Source: WTO Statistics Database.

to institutional worsening. Thirdly, natural resources may increase the probability of civil wars, especially in countries marked by an uneven distribution of natural resources within their territory and ethnic divisions.

As argued in WTO (2010), however, the empirical relevance of the resource curse is mixed.³⁶ On the one hand, greater natural resource wealth is associated with higher GDP per capita in a cross-country sample (Sinnott et al., 2010). On the other hand, almost 80 per cent of resource-driven countries identified by Dobbs et al. (2013a) have per capita income below the global average. Since 1995, more than half of these countries have failed to match the average growth rate (of all countries). These seemingly contradictory results also emerge from a recent study by Bluedorn et al. (2013). They analyse episodes of growth take-offs in nearly 70 developing economies or low-income countries (LICs) over the past six decades. The study reveals that resource-rich LICs with recent growth take-offs performed particularly well (with GDP per capita typically rising by 80 per cent in ten years) but at the same time many resource-rich countries did not manage to jump-start growth.

The sustained increase in natural resource prices in the early- and mid-2000s documented in Section D.1 has, without any doubt, contributed to economic growth in several resource-rich developing countries, especially in Sub-Saharan Africa and in Latin America. Since 2000, resource exporters in Sub-Saharan Africa have experienced higher GDP per-capita growth than other countries in the region (International Monetary Fund (IMF), 2012c).³⁷ According to the IMF analysis, the stronger growth reflects not only favourable commodity-price developments but also the effects of new resource discoveries (for example, in Angola, Equatorial Guinea and Tanzania). For Latin America, *The Economist* (2010) suggests that the rise in world prices of commodities, and the related increase in their output (and exportation), may have accounted for between one-third and one half of the region's growth over the decade 2000-10.

Natural resource abundance, however, has not been the only route to strong and sustained growth in these regions. In a recent study, the IMF (2013a) identifies the top six growth performers in Sub-Saharan Africa between 1995 and 2010 based on two criteria: real output growth greater than 5 per cent and real GDP per capita growth of more than 3 per cent. The following countries meet these criteria: Burkina Faso, Ethiopia, Mozambique, Rwanda, Tanzania and Uganda. None of these countries was resource-rich at the beginning of the sample period.³⁸ In these countries, growth was spurred and sustained by improved macroeconomic management, stronger institutions, increased aid and higher investment in both physical and human capital (IMF, 2013a). High prices of natural resources played an indirect role, with some of these countries (especially Mozambique) having received large investments related to discovery of natural resources.

Some countries have managed to translate growth into broad-based prosperity (Dobbs et al., 2013a). The relationship between natural resource dependence and broad measures of social development, such as health and education, is however a source of concern. Figure D.25 shows the correlation between natural resource abundance (proxied by total natural resources income as a percentage of GDP) and the Human Development Index (HDI), which uses statistics on life expectancy, education and income to rank countries.³⁹ The correlation is negative, meaning that growing dependence on natural resources is associated with declining levels of health and education.

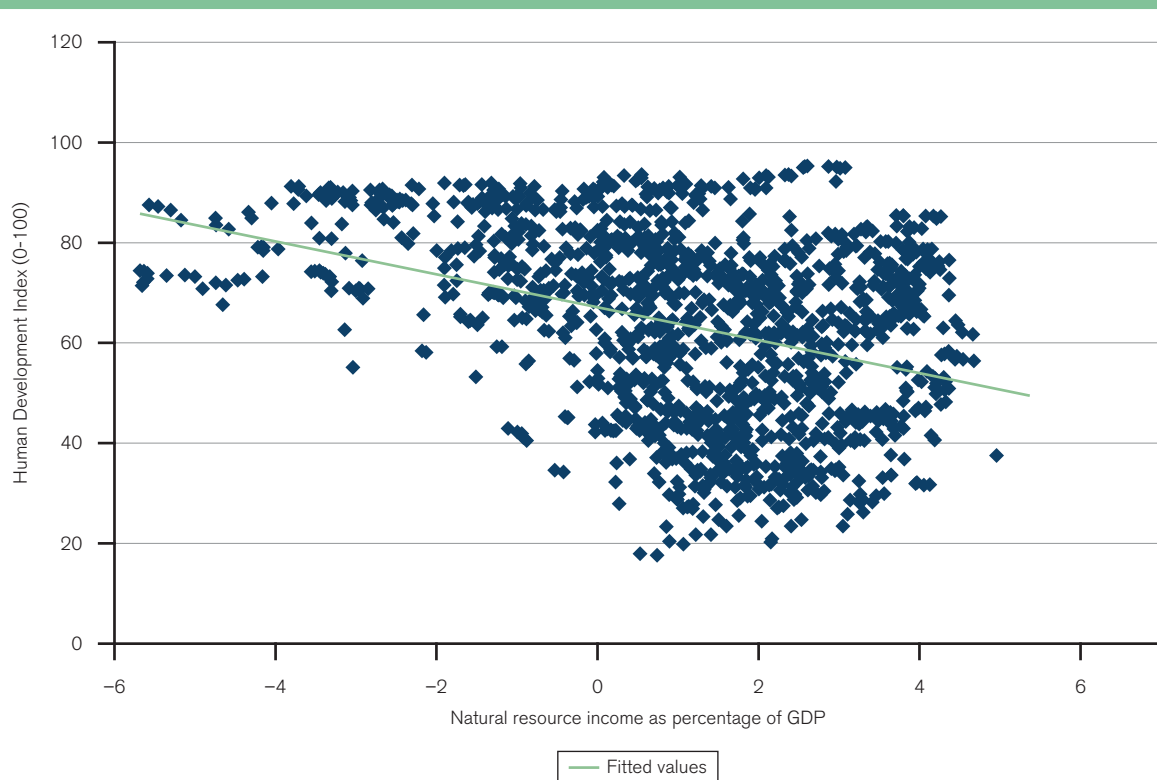
The empirical literature has consistently found that social development is, on average, lower in resource-rich countries. Carmignani and Avom (2010) argue that, after taking per-capita income and other macroeconomic and institutional factors into account, a higher dependence on primary commodity exports is negative for social development. A similar result is obtained by Bulte and Damania (2005), who find that countries with a greater reliance on point resources (i.e. resources such as oil and gold with a single identifiable source) perform worse than others. With all other things being equal, they have lower HDI scores and life expectancy, and higher percentages of the population suffer from undernourishment or lack of access to safe water. Resources from diffuse sources (e.g. agricultural products) are conversely associated with improvements in levels of health and education. The IMF (2012b) further supports the view that faster growth, at least in the oil producers, does not necessarily translate into faster improvements in aggregate social welfare (measured by various indicators, such as HDI, youth literacy rate, infant mortality, measles immunization, primary school attendance) in Sub-Saharan Africa.

The question of whether natural resources can be leveraged to sustain broad-based development remains therefore open. The remainder of this section considers several challenges faced by resource-abundant countries in the implementation of a resource-based development strategy. Not only the economic but also the social and environmental aspects will be analysed.

(i) *Harnessing revenues and avoiding boom-bust cycles*

Both in the metals and mineral sectors and in the energy sectors, rising prices have led to increased exploration efforts in several countries. Mining investments have increased more than fourfold over the past decade, to around US\$ 80 billion, with iron ore and copper dominating. Exploration and development expenditure by the 70 largest global companies in the oil sector increased from US\$ 315 billion in 2007 to US\$ 480 billion in 2011 (Africa Progress Panel, 2013). Accordingly, Lee et al. (2012) report growth in reserves between 2000 and 2010 of 21 per cent for iron ore, 13 per cent for potash,

Figure D.25: Correlation between log of natural resource income (as percentage of GDP) and Human Development Index (1990–2010)



Source: WTO Secretariat estimations based on World Development Indicators (WDI) and United Nations Development Programme (UNDP) data.

Note: Each point represents a country-year observation.

21 per cent for bauxite, 103 per cent for copper, 32 per cent for zinc, 38 per cent for nickel and 10 per cent for rare earths.⁴⁰ According to OPEC data (Organization of the Petroleum Exporting Countries (OPEC), 2013), proven oil reserves worldwide increased by 27 per cent between 2002 and 2012, corresponding to a 12 per cent increase in the ratio of reserves to production.

The pace and intensity of new discoveries have been particularly intense in Africa, where, since 2000, drilling has increased threefold and the ratio of proven oil reserves to production has increased from 30 to over 40 per cent (Africa Progress Panel, 2013). Oil and natural gas exploration has increased both in traditional West African producers, such as Angola and Nigeria, but also in East Africa. It is estimated that the coastal areas of the Indian Ocean could hold more oil than the known reserves of the United Arab Emirates and the Bolivarian Republic of Venezuela. Due to under-exploration so far, the success rate of new explorations is exceptionally high in East Africa, and the exploration and development costs exceptionally low, at US\$ 6-14 per barrel (Africa Progress Panel, 2013).⁴¹ A similar pattern holds for mineral resources, in particular iron ore, with increased exploration especially in West Africa.

Increased exploration and exploitation of natural resources implies large potential revenue windfalls. Governments

face a number of policy options in making productive use of such windfalls.⁴² The commonly held view is they should not be consumed immediately but put in a fund, typically a sovereign wealth fund (see Box D.6), to spread the benefits across generations and deal with the otherwise adverse effects of the Dutch disease and the resource curse (Van der Bremer and Van der Ploeg, 2013). The optimal policy is, however, dependent on factors such as the price volatility of the resource in question, the level of development of the country and the broader constraints faced by the economy. Van der Ploeg and Venables (2011) examine policy options for a country experiencing a pre-announced windfall in oil revenues, lasting between T_0 and T_1 (see Figure D.26).

A possible strategy would be to consume the revenue as it comes in, so that the increment in consumption is equal to the revenue flow (green line in the figure). Under the permanent income hypothesis (PIH), however, the optimal policy would be the spreading of consumption over a number of years, as indicated by the PIH dashed line. This involves borrowing ahead of the revenue flow, then during the period of flow first repaying debt and subsequently accumulating assets in a sovereign wealth fund. After the windfall, the interest on the wealth fund pays for the permanent increase in public spending and private consumption. There is

Table D.7: Assets held by sovereign wealth funds (SWFs), 2012
(US\$ billion and percentage of GDP)

Country	Year started	Origin	Assets (US\$ billion)	GDP (US\$ billion)	Assets (% of GDP)
China	1997	Non-commodity	1,142.0	8,227.1	13.9%
United Arab Emirates	1976	Oil	803.2	383.8	209.3%
Norway	1990	Oil	611.0	500.0	122.2%
Saudi Arabia, Kingdom of	n/a	Oil	532.8	711.0	74.9%
Singapore	1974	Non-commodity	404.7	276.5	146.4%
Kuwait, the State of	1953	Oil	296.0	183.2	161.5%
Hong Kong, China	1993	Non-commodity	293.3	263.3	111.4%
Russian Federation	2008	Oil	149.7	2,014.8	7.4%
Qatar	2005	Oil	100.0	192.4	52.0%
Australia	2006	Non-commodity	80.0	1,532.4	5.2%
United States	1854	Oil/Minerals/Non-commodity	79.0	16,244.6	0.5%
Kazakhstan	2000	Oil	58.2	203.5	28.6%
Algeria	2000	Oil	56.7	205.8	27.6%
Republic of Korea	2005	Non-commodity	43.0	1,129.6	3.8%
Malaysia	1993	Non-commodity	36.8	305.0	12.1%
Azerbaijan	1999	Oil	30.2	66.6	45.3%
Brunei Darussalam	1983	Oil	30.0	17.0	176.9%
Ireland	2001	Non-commodity	30.0	210.6	14.2%
France	2008	Non-commodity	28.0	2,611.2	1.1%
Iran	1999	Oil	23.0	552.4	4.2%
New Zealand	2003	Non-commodity	15.9	171.3	9.3%
Canada	1976	Oil	15.1	1,779.6	0.8%
Chile	2007	Copper	15.0	269.9	5.6%
Brazil	2008	Non-commodity	11.3	2,252.7	0.5%
East Timor	2005	Oil and Gas	9.9	1.3	765.7%
Bahrain, Kingdom of	2006	Non-commodity	9.1	30.4	30.0%
Oman	1980	Oil and Gas	8.2	78.1	10.5%
Total			4,977.1		
Total oil- and gas-related			2,789.0		

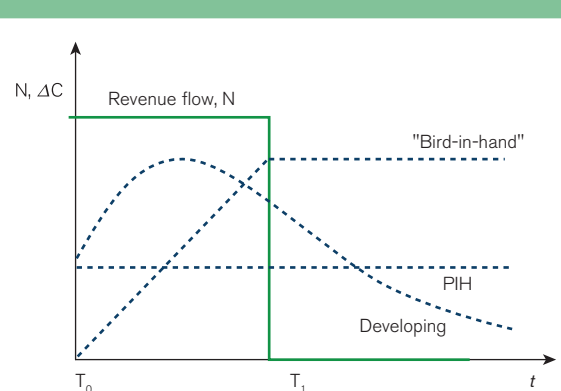
Source: Sovereign Wealth Fund Institute and World Development Indicators. (WDI).

Note: Canada: Alberta; United States: Alaska, New Mexico and Texas; United Arab Emirates: Abu Dhabi and Dubai. If a country has more than one fund, the column "Origin" is the earliest year and the column "Assets (US\$ billion)" is the sum of the assets of each fund.

a third, more conservative approach, which is to build up a sovereign wealth fund and only consume its interest, generating a consumption profile represented by the "bird-in-hand" dashed line. Under this approach, consumption would build up more slowly than under the PIH approach, as it would reach its maximum only after the resource has been depleted.

For countries with under-developed capital markets and high sovereign borrowing costs, however, Van der Ploeg and Venables (2011) show that the optimal strategy implies: (1) an immediate increase in consumption, to raise incomes of the present generation, which is poorer than future generations; (2) investment in domestic assets (physical infrastructure and human capital); and (3) some repayment of foreign debt, to reduce interest rates in the domestic economy. This generates the hump-shaped consumption path in Figure D.26. The initial increment to consumption is balanced with the

Figure D.26: Paths of consumption growth after a resource windfall



Source: Van de Ploeg and Venables (2011).

Note: The horizontal axis represents time. The vertical axis represents the revenue flow (N) and the change in consumption, ΔC .

Box D.6: Sovereign wealth funds

There are two main origins of funding for sovereign wealth funds (SWFs): resources such as oil, gas and copper; and financial non-commodity sources. The focus of this box is on resource-backed SWFs.

If natural resources generate a substantial stream of income, resource-rich countries will often channel this into their newly established SWFs. As already highlighted, these funds are created not only to stabilize the economy and to support intergenerational savings but also to boost domestic investment, mainly in infrastructure. Even though SWFs are a relatively recent phenomenon, they have managed to accumulate significant reserves. In 2012, the average amount of assets in SWFs of an oil-rich country was above 100 per cent of the country's GDP, as shown in Table D.7.

Some African countries have developed explicit fiscal frameworks aimed at saving resources for the future or creating a fiscal "buffer" to help protect budget spending from revenue volatility. Since 1994, fiscal policy in Botswana has been guided by a Sustainable Budget Index principle, which seeks to ensure that non-investment spending is financed only with non-resource revenue. Nigeria created a SWF in 2011. Ghana put 70 per cent of petroleum revenue revenues into public spending and divided the rest between a stabilization fund and a heritage fund.

Investment in social protection is one of the most powerful ways in which governments in Africa can extend the benefits of resource wealth to their citizens. The United Nations Educational, Scientific and Cultural Organization (UNESCO) (2012) estimates that increased revenue from minerals could put another 16 million children into school across 17 resource-rich countries. In Rwanda, much of the rapid decline in poverty, from 57 per cent of the population in 2006 to 45 per cent in 2011, results from the Umurenge Programme of Public Works and from government payments to the poor. During the 2011 drought in East Africa, Ethiopia's Productive Safety Net Programme not only saved lives but also provided support to help people cope with the crisis without having to sell off vital productive assets or take children out of school.

need to finance infrastructure and debt reduction. Higher investment puts the economy on a higher growth path, with beneficial effects on wages and on subsequent consumption. After depletion, the consumption increment remains positive, but moves towards zero. This is because instead of building up an overseas sovereign fund, the resource wealth has been used to build up the human and physical capital stock of the economy, improving its growth prospects.

The results of Van der Ploeg and Venables (2011) suggest that the establishment of an intergenerational fund that would spread out the benefit of resource windfalls across generations is relatively more attractive for rich countries than for poor countries.⁴³ Resource-rich countries facing capital scarcity and paying a risk premium on their sovereign debt would instead find it more attractive to build a domestic investment fund (Van der Bremer and Van der Ploeg, 2013; Arezki et al., 2012). Such a fund would channel part of the windfall towards domestic investment in infrastructure, health and education. The important caveat, underlined both by Van der Bremer and Van der Ploeg (2013) and by Arezki et al. (2012), is that, if a country has limited capacity to utilize funding (due to planning and implementation lags, for example), there is a rationale for temporarily putting savings in a "parking fund" until capacity constraints are addressed.

As discussed above, natural resource sectors are subject to high volatility in prices. Since supply tends to remain constant despite fluctuations in prices, at least in the short run, this

translates into high volatility in revenues. For this reason, Van der Bremer and Van der Ploeg (2013) and Cherif and Hasanov (2013) argue in favour of the establishment of a liquidity fund to accumulate savings that would help to protect exporters from price volatility. According to Van der Bremer and Van der Ploeg (2013), the size of such a liquidity fund is increasing with price volatility, with the degree of risk aversion of policy-makers, and with the size of the windfall revenue over time. Conversely, growth in the non-resource part of the economy curbs the need for precautionary savings in the liquidity fund.

Volatile commodity prices have often induced boom-bust cycles (Van der Ploeg, 2011). During the 1970s when commodity prices were high, several resource-rich countries used revenue as collateral for debt but during the 1980s commodity prices fell significantly, contributing to the onset of debt crises. At the root of boom-bust cycles is the link between surging resource revenue and increased spending levels (i.e. pro-cyclical spending), especially in countries with relatively weak institutional environments (Arezki et al., 2012).⁴⁴

Cyclical fiscal policy was common in developing countries until the early 2000s. Since then, there has been a shift towards counter-cyclical fiscal policy in a large number of countries. Frankel et al. (2013) consider the cyclical nature of government spending, measuring the correlation between the cyclical components of spending and GDP, in a sample of 94 countries (21 developed and 73 developing countries).⁴⁵ A positive correlation indicates

Figure D.27: Fiscal policy of resource-rich developing economies, 1960–2009



pro-cyclical (destabilizing) government spending. A negative correlation indicates counter-cyclical (stabilizing) government spending.

Between 1960 and 1999, more than 90 per cent of the developing countries in the sample show positive correlations (pro-cyclical spending) while around 80 per cent of industrial countries show negative correlations (counter-cyclical spending). The situation changes dramatically in the 2000–2009 period, when 26 out of 73 developing countries (around 35 per cent) show negative correlations (counter-cyclical spending). Frankel et al. (2013) argue that the main reason for this change in fiscal behaviour in developing countries is improvement in institutions (law and order, bureaucracy quality, levels of corruption, and other risks to investment). This is because institutional quality and cyclical spending are inversely correlated, meaning that as institutional quality increases, pro-cyclical spending declines.

Within the group of developing countries, resource-rich countries have followed a similar pattern to resource-poor countries. Using the dataset of Frankel et al. (2013) and defining resource-rich as those developing countries with total natural resource income (as per cent of GDP) above the median of developing countries between 1960 and 2009, we identify 45 resource-rich developing countries. Out of those, 16 (around 35 per cent) graduated from a pro-cyclical to a counter-cyclical fiscal policy (see Figure D.27).

The 45 resource-rich developing countries are indicated with green dots, all other countries are indicated with blue dots. Countries in the south-east quadrant graduated from pro-cyclical fiscal policy in the 1960–99 period to counter-cyclical fiscal policy in the 2000–09 period. Countries in the north-east (south-west) quadrant had pro-cyclical (counter-cyclical) fiscal policy in both periods. Countries in the south-west quadrant switched from counter-cyclical fiscal policy in the 1960–99 period to pro-cyclical fiscal policy in the 2000–09 period.⁴⁶

(ii) Diversification

Diversification of the production and export structure has long been at the forefront of economic policy in most resource-rich countries. A very general rationale for diversification is that diversified economies tend to perform better over the long term (Hesse, 2008; Imbs and Wacziarg, 2003; Lederman and Maloney, 2007).⁴⁷ There are other rationales for diversification that apply in particular to economies that specialize in natural resources.

First, diversification towards non-natural resource sectors may be justified if: (1) these sectors are characterized by positive spillovers on the rest of the economy, such as learning-by-doing or knowledge spillovers; and (2) these sectors would shrink due to Dutch disease effects.⁴⁸ Secondly, diversification into other tradable goods/services becomes a prerequisite for sustained growth

if resource production is subject to quick depletion (Sustainable Development Solutions Network (SDSN), 2013), significant impact on the environment and technology shocks that threaten to eliminate or sharply reduce comparative advantage (Gelb, 2010).⁴⁹ Thirdly, diversification is called for in cases of substantial price volatility of the dominant natural resource (Sinnott et al., 2010; Cherif and Hasanov, 2013; Van der Bremer and Van der Ploeg, 2013).

Diversification can occur within the resources sector or in other sectors. Diversification within the resource sector can be of two types: horizontal and vertical (Hvidt, 2013). Horizontal diversification implies seeking new opportunities for high-value and high-quality varieties within product categories. Vertical diversification entails adding more stages of processing – for instance, in the case of an oil-producing country, developing capital-intensive fertilizer and petrochemical industries. Vertical diversification encourages upstream and downstream linkages in the economy (as the output of one activity becomes the input of another) and it entails a shift from one sector or industry (generally, the primary sector) to another (generally, secondary and tertiary sectors) (Hvidt, 2013). Diversification away from the natural resources sector, conversely, can entail the development of other productive sectors (including labour-intensive manufacturing) and tradable services.⁵⁰

Advocates of diversification away from natural resources have often argued that the production of fuel and mineral products is carried out in enclaves, with little or no linkages with the rest of the economy. A prominent example is Rodrik (2013), who contrasts “natural resource enclaves” with “escalator industries”. In Rodrik’s view, the former are skill and capital intensive, and disentangled from the domestic economy. The latter are adept at absorbing technologies from abroad, they employ relatively unskilled workers, and they establish significant linkages with the domestic economy. A related argument is that natural resources production has a lower growth potential than other economic sectors because it carries little scope for innovation and productivity growth. While both critiques are valid in several contexts,⁵¹ they cannot be applied generally. For instance, evidence on Peruvian gold mining shows the presence of extensive linkages through purchases of local labour and other inputs. Each 10 per cent increase in the mine’s purchases is associated with a 1.7 per cent increase in local incomes, with a significant impact on alleviating poverty.⁵²

In the presence of within-sector diversification, Sinnott et al. (2010) argue that the mining sector can generate a high degree of innovation and productivity growth. In particular, international trade in metals is associated with a high degree of intra-industry trade and with good potential to specialize in (and upgrade to) high-value, high-quality varieties within product categories (horizontal diversification). It is also associated with moving up

the value chain to more processed products (vertical diversification).⁵³ Sinnott et al. (2010) estimate that much of the growth in sectoral exports of Latin American countries can be attributed to these countries moving towards production of more sophisticated and higher-value-added metal products. Diversification within the resource sector also carries the potential to alleviate the tendency to real exchange rate appreciation associated with resource windfalls (Beverelli et al., 2011).⁵⁴

Each option for diversification has advantages and disadvantages, and there is no one-size-fits-all approach. Rather, the right kind of diversification that can (from a positive perspective) or should (from a normative one) be attained depends on sector- and country-specific characteristics. If the natural resource is subject to accelerated depletion, for instance, the only viable option might be diversification into other sectors rather than the development of a downstream industry. If the economic and institutional environment functions well, the incentives may favour quality upgrading and technological spillovers rather than enclave production (Sinnott et al., 2010).⁵⁵

A final point concerns employment. As argued by UNCTAD (2013b), “where exports are based on natural resource extraction, the employment intensity of growth has been low. In countries whose tradable sector is dominated by export-oriented labour-intensive manufactures, by contrast, more jobs have been generated”. This observation calls for particular emphasis on job creation in any diversification effort, be it within or away from natural resource sectors.

(iii) *Foreign direct investment*

Resource-seeking is, in principle, a motive for firms to be engaged in foreign direct investment (FDI) because natural resources are location-specific. Indeed, according to Dunning (1993), natural resources justified much of the FDI flows in the 1800s and early 1900s, largely from the most industrialized nations to the less developed areas of the globe. The exploration and extraction of natural resources is often conducted by foreign multinationals. Due to a combination of high commodity prices and concerns about the security of supply of critical resources, in recent years there has been a global surge in investment activity – including exploration – in resource sectors (see Section D.1).

Overseas investment activities by state-owned enterprises (SOEs) have received particular attention (Lee et al., 2012). Though accounting for only 11 per cent of global outward FDI in 2010, overseas investments by SOEs is concentrated in resource sectors (accounting for nearly two-thirds of overall FDI by SOEs). According to Lee et al. (2012), there has been a rapid increase of FDI by SOEs from G-20 developing economies, from 42 per cent of total SOE outflows in 2003 to 59 per cent in 2010.

While resource abundance unambiguously increases FDI in resource sectors, its effect on overall FDI is less clear. On the one hand, studies such as Sanfilippo (2010), Cheung et al. (2012) and Kolstad and Wiig (2012) find a positive effect of resource abundance on FDI. On the other hand, Poelhekke and van de Ploeg (2010) argue that resource-based FDI (which is positively affected by resource abundance) displaces non-resource-based FDI (which is negatively affected by resource abundance). Therefore, they argue, aggregate FDI is lower in resource-rich countries, especially if they are geographically close to many other big markets.

A potential risk is that resource-based FDI is very capital-intensive and can lead to fewer beneficial spillover effects into the non-resource sectors of the host economy than non-resource FDI if it relies less on local sub-contractors or suppliers. As argued above, the outcome in terms of spillover effects of resource FDI on the local economy is likely to depend on the economic and institutional environment. Moreover, recent experience in Sub-Saharan Africa shows that resource FDI has positive spillovers on physical infrastructure (Kaplinsky and Morris, 2009).⁵⁶ It can therefore lead to opening up growth corridors that can be beneficial to other sectors in the economy, such as agriculture (Weng et al., 2013).

There are several other FDI-related challenges facing resource-rich countries. First, there may be substantial differences in access to information between a government and a multinational oil or mining company, whereby the latter has better access to geological analysis, commercial market information, and information on technologies for exploration and extraction (Africa Progress Panel, 2013). To overcome such differences, the Sustainable Development Solutions Network (SDSN) (2013) proposes the establishment of competitive bidding mechanisms because they can reveal the market value of a host country's assets.⁵⁷

Secondly, and related to the first, there is the "hold-up" problem, whereby a government may have an interest in renegotiating *ex post* the terms of a contract, and investors are likely to be deterred by the consequent risk. Since these changes (renegotiation or outright nationalization) are most likely to occur if outcomes are better than expected,⁵⁸ they have the effect of reducing the expected returns to investment, and the government will receive a lower payment in the initial auction of licences (Collier and Venables, 2010).⁵⁹ To address such hold-up problems, the Sustainable Development Solutions Network (SDSN) (2013) proposes the establishment of a tax regime that builds on contingencies such as changes in global commodity prices.

Thirdly, foreign investors in extractive industries tend to operate across jurisdictions and through complex company structures (Africa Progress Panel, 2013). The presence of offshore-registered companies in the ownership chain limits public disclosure requirements and creates

opportunities for trade mispricing, aggressive tax planning and tax evasion. To address these problems, the Africa Progress Panel (2013) proposes: (1) the deepening of voluntary reporting standards, such as those embodied in the Extractive Industries Transparency Initiative (EITI);⁶⁰ (2) the establishment of mandatory reporting standards, such as those embodied in the 2010 US Dodd-Frank Act and in similar legislation recently approved in the European Union; and (3) enhanced multilateral tax cooperation.

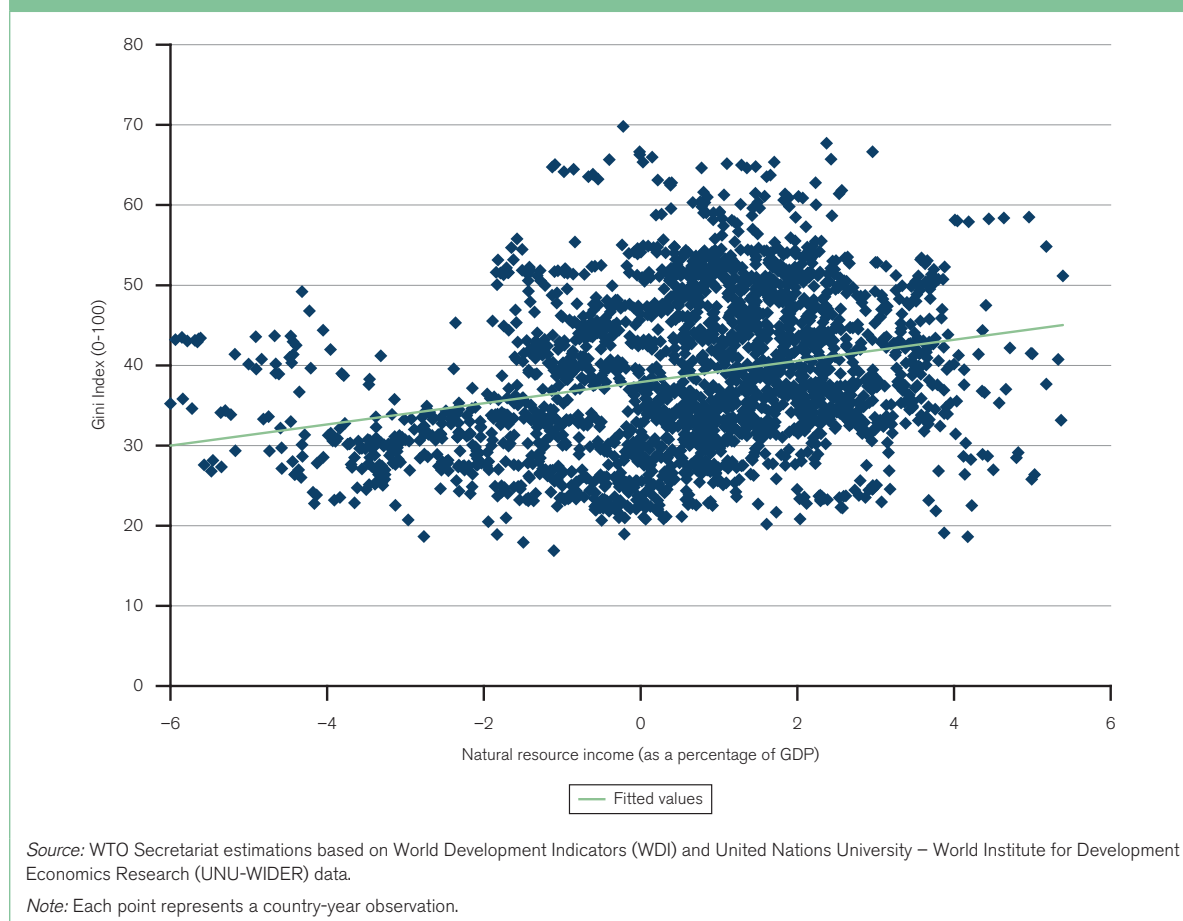
(iv) Addressing social and environmental concerns

The distribution of natural resource windfalls across the population is an important question in every country but it is particularly important in most developing countries in view of its role in poverty reduction. There is no consensus in the economic literature on whether natural resource wealth is associated with inequality. Davis and Vásquez Cordano (2013), for instance, find no support either for the claim that extraction-led growth is good for the poor or that it is bad for the poor. Goderis and Malone (2011) show that a rise in the prices of non-agricultural commodities lowers inequality in the same year but it has no impact on the long-run income inequality. In a study on commodity price shocks in Australia, Bhattacharyya and Williamson (2013) show that a sustained increase in the price of renewables (wool) reduces inequality whereas the same for non-renewable resources (minerals) increases inequality.

Across countries and years, the correlation between natural resource abundance (proxied by total natural resources income as a percentage of GDP) and inequality (proxied by the Gini index of income distribution) is positive, as shown in Figure D.28, suggesting that inequality increases in line with a country's abundance of natural resources. However, the correlation loses statistical significance in a regression controlling for general country- and year-specific factors.⁶¹ The impact of natural resources on income inequality, therefore, is likely to depend on other country characteristics. Fum and Holder (2010) show that the degree of ethnic polarization matters. Natural resources raise income inequality in ethnically polarized societies but reduce income inequality in ethnically homogenous ones.

Natural resource-based industries commonly impose environmental harm. In the case of large-scale mining, there is degradation of the land surface and underlying strata as well as degradation of surface and underground water resources, both in the exploration and exploitation phases (Sinnott et al., 2010). In the case of small-scale mining, the major environmental problems are due to mercury escaping into the environment (Sinnott et al., 2010). Finally, in the case of oil production, the major environmental problems are related to waste pits contaminated with oil or drilling mud,⁶² un-remediated spills, discharge of untreated produced water, installations

Figure D.28: Correlation between log of natural resource income (as a percentage of GDP) and Gini index, 1990–2010



decommissioned or abandoned without proper planning, and flaring of associated gas (Sinnott et al., 2010).⁶³

The aggregated data show a negative correlation between natural resource abundance (proxied, as above, by total natural resources income as a percentage of GDP) and the Environmental Performance Index (EPI),⁶⁴ as shown in Figure D.29. This correlation stays negative, although it loses statistical significance after controlling for general country- and year-specific factors.

5. Role of trade policy measures for natural resources

In natural resource sectors, it may be argued that the world is “upside-down”: import restrictions are much less prevalent than export restrictions. As argued by the WTO (2010), tariff protection in these sectors is generally lower than for overall merchandise trade. In particular, tariff protection is very low in mining and fuels, with an average applied tariff of 5.7 and 5.8 per cent, respectively, as compared to 10.3 per cent for overall merchandise trade in 2007. Conversely, there is a higher incidence of export taxes applied by exporting countries to natural resources relative to other sectors (WTO, 2009; 2010). Eleven per

cent of world trade in natural resources is covered by export taxes, while just 5 per cent of total world trade is covered by export taxes. For some countries, export taxes on natural resources cover a large percentage of their total exports in natural resources.

The OECD recently collected an inventory of more than 5,000 restrictions on industrial raw materials applied by 57 countries between 2009 and 2012 (Fliess and Mård, 2012). The inventory, which includes both taxes and quantitative export restrictions (prohibitions, quotas, automatic and non-automatic licensing, etc.), covers mostly Harmonized System (HS) categories 25-28 (mineral products; chemicals and allied industries); 44-46 (wood); 71-72 (stones and metals); and 74-81 (copper, nickel, aluminium, lead, zinc, tin and base metals). Table D.8 shows that, on average, more than 40 per cent of the measures were export taxes, followed by licensing requirements (more than 30 per cent). The very low number (and share, less than 10 per cent) of export prohibitions is likely to be due to the General Agreement on Tariffs and Trade (GATT) Article XI provisions on the elimination of quantitative restrictions that affect WTO members in the sample.

From a theoretical perspective, export restrictions may serve the following purposes: achieve terms-of-trade

Figure D.29: Correlation between log of natural resource income (as a percentage of GDP) and Environmental Performance Index, 2000–10

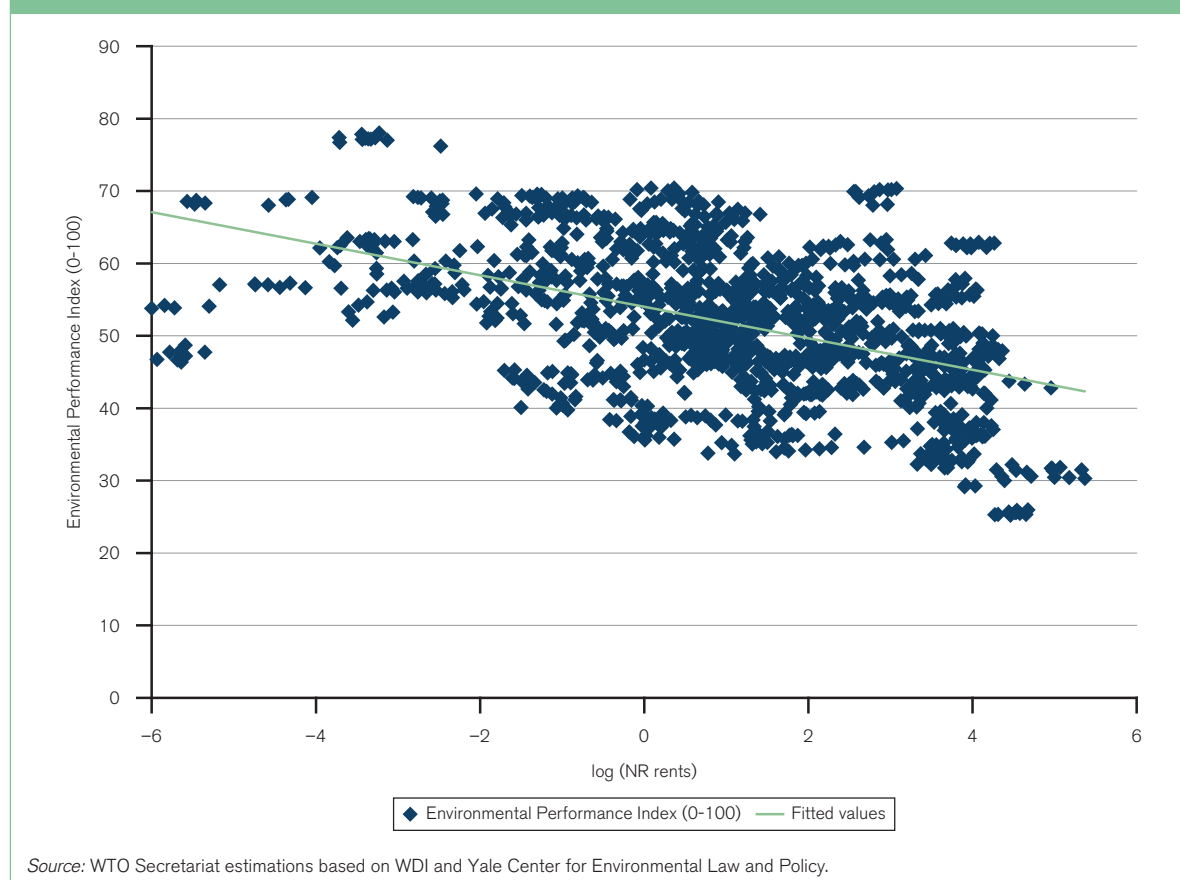


Table D.8: Export restrictions on industrial raw materials, by type and year

Type	2009	2010	2011	2012	Total
Licensing requirement	558	635	391	295	1,879
Export tax	844	802	551	181	2,378
Export prohibition	88	168	96	112	464
Others	220	341	147	74	782
Total	1,710	1,946	1,185	662	5,503

Source: OECD Inventory of Restrictions on Exports of Raw Materials.

gains; production relocation; support to downstream sectors (closely related to the production relocation motive); export diversification (closely related to the two previous motives); protection of the environment; avoidance of resource depletion; income stabilization; and response to tariff escalation in export markets (see WTO 2009; 2010). The OECD inventory reports an alleged justification for 3,236 measures, which constitute almost 60 per cent of the 5,503 measures included in the dataset. This makes it possible to compare governments' stated motives with the various rationales put forward by economic theory. The motives stated in the OECD inventory can be split into seven broad categories: addressing the current economic conditions; preventing

illegal activities; collecting revenues; ensuring export; protecting domestic industries; conserving exhaustible resources; and protecting the environment.

As shown in Table D.9, most measures for which a purpose is declared are explicitly imposed to protect domestic industries. Promotion of domestic processing/value added is a more frequently cited justification for regulation of exports of semi-processed commodities than for regulation of exports of unprocessed raw materials (Fliess and Mård, 2012). These findings are consistent with the fact that several resource-rich countries set de-escalating (or degressive) export tax structures (WTO, 2010).

Table D.9: Export restrictions on industrial raw materials, by stated purpose

Purpose	Number	Percentage
Protecting domestic industries	1,244	38.44
Addressing the current economic conditions	669	20.67
Preventing illegal activities	648	20.02
Conserving exhaustible resources	281	8.68
Collecting revenues	236	7.29
Ensuring export	83	2.56
Protecting the environment	75	2.32
Total	3,236	100
Without justification	2,268	
Total	5,504	

Source: OECD Inventory of Restrictions on Exports of Raw Materials.

On the import side, the low level of tariff protection does not tell the whole story. In the mining sector (but not in fuels) there is evidence of tariff escalation (i.e. the use of higher import duties on semi-processed products and on finished products than on raw materials) in developed countries, which represent the biggest markets for developing country exporters. Latina et al. (2011) argue that export restrictions can be a response to tariff escalation in a production relocation effort. The evidence presented above on “protection of domestic industries” being the most cited motivation for export restrictions is in line with their argument. More research is however needed on discerning the determinants of export restrictions.

One of the overarching objectives of resource-rich countries has been to increase local content (the share of domestic products in the inputs used by extractive industries) or local value added (the share of domestic value added in total value added). Governments use various instruments to implement local content/value added policies. Tordo et al. (2011) list nine categories of instruments, ranging from contractual requirements that favour the use of local goods and services to direct government intervention through state-owned enterprises (SOEs). The aim of local content policies has evolved from creating backward linkages (that is, supplying input to the local economy through transfer of technology, the creation of local employment opportunities, and increasing local ownership and control) to creating forward linkages (that is, processing the sector’s output prior to export) (Tordo et al., 2011). Economic theory argues that the capability of the domestic economy to develop backward linkages is important for local content policies to be effective tools of long-term economic development (Tordo et al., 2011).

6. Conclusions

The substantial price increases between 2003 and 2008 have led some commentators to argue in favour

of a “commodity super-cycle”. Although prices of natural resources and of agricultural products have recently subsided, they are still substantially higher than a decade ago. The question of whether commodities could be part of a development strategy remains relevant. It is certainly not possible to offer a definitive “yes” or “no” answer. Rather, the focus of this section has been on the challenges and opportunities that resource-endowed developing countries face.

Trade in natural resources (defined as fuels and mining products for the purposes of this report) has increased both in value and in volume terms since 2000 (notwithstanding a slump in 2008), especially in regions such as Sub-Saharan Africa and Latin America and the Caribbean. Countries in these regions have experienced noticeable economic growth during the years of sustained resource price increases. Several countries have improved the management of windfall revenues and have managed to attract significant FDI related to exploration and exploitation of newly discovered resources. Economic diversification and the broad social and environmental impact of natural resource extraction and trade, however, remain significant challenges.

Several countries (mostly, but not exclusively developing ones) adopt some type of restriction on the exportation of their natural resources. There are, in principle, several reasons behind this. Based on a recent OECD database, the section has reviewed the available evidence on the alleged purpose of export restrictions. Most measures are explicitly imposed to protect domestic industries and to promote domestic processing/value added. This may partly be in response to tariff escalation in importing countries. Local content schemes are also motivated by the wish to increase domestic value added. Economic theory argues that the capability of the domestic economy to develop backward linkages is important for local content policies to be effective tools of long-term economic development.

Agriculture represents an important sector, both in terms of production and in terms of consumption, for many developing and least-developed countries (LDCs). The sector therefore plays a crucial role for their development strategies. Countries that managed to increase productivity in the agricultural sector have been characterized by high rates of economic growth and poverty reduction (in particular, improvements in the livelihoods of the very poor). Agricultural trade has increased significantly in recent years, in the context of high and rising agricultural prices. This has created opportunities for developing countries to leverage agricultural exports for development.

This section has highlighted the various development challenges facing exporters of agricultural goods, and in particular LDCs. First, the rising share of processed goods in total agricultural trade, which reflects increased vertical coordination of production structures, indicates that involvement in food supply chains is very important. Secondly, productivity gaps may represent a disadvantage

for developing country producers in global competition. Thirdly, access to developed and G-20 developing countries' markets continues to be an issue, especially for LDC exporters. This is partly due to relatively high agricultural tariffs but in particular it is due to the costs of meeting standards (including private standards) and sanitary and phytosanitary (SPS) regulations, and to the costs caused by delays in crossing borders.

The section has highlighted two more challenges. First, numerous value chains in the agricultural sector are characterized by market concentration, sometimes at multiple points along the value chain. This may create problems for small producers in developing countries. Secondly, prices in the agricultural sector are notoriously volatile, which can create difficulties for consumers and for producers in the light of investment decisions they may have to take. Evidence suggests that if counter-cyclical measures that aim at reducing volatility are introduced jointly by net importers and net exporters, price hikes may actually be exacerbated.

Endnotes

- 1 Forestry and fishery are excluded from the definition of natural resources because the focus of the literature that has analysed the link between natural resource exports and development has exclusively been on extractive resources, such as minerals and oil.
- 2 Some challenges are, however, common to both the natural resources and agricultural sectors. These include the management of price volatility and the attraction of foreign direct investment (FDI).
- 3 See, for instance, Erten and Ocampo (2012). The authors define commodity super-cycles as episodes in which the upward price trend lasts much longer than usual (10-35 years) and covers a broad range of commodities.
- 4 The Africa Progress Panel (2013) reports that since the end of the 1990s, consumption of refined metals in China has climbed by 15 per cent a year on average. The country's share of global demand for copper, aluminium and zinc has more than doubled; for iron ore, nickel and lead it has tripled. Metal intensity (measured as resource use per US\$ 1,000 of real GDP) is nine times higher in China than the global average. The fact that China's ores are lean and difficult to smelt raises their extraction costs (China.org.cn, 2013).
- 5 See WTO (2010) for an in-depth discussion on the causes of oil price volatility and on its effects on oil-exporting and on oil-importing countries.
- 6 Following the shifting patterns in global economic activity outlined in WTO (2013c), global energy trade will be re-oriented from the Atlantic basin to the Asia-Pacific region. China will become the largest oil-importing country and India will become the largest importer of coal by the early 2020s (IEA, 2013).
- 7 An alternative explanation is proposed by Baumeister and Kilian (2013). They argue that the link between food and oil prices is largely driven by common macroeconomic determinants, rather than the pass-through from higher oil prices to food prices.
- 8 For an in-depth discussion on mineral and energy commodities, see Lee et al. (2012). Studies that argue in favour of permanently higher prices of commodities include Kaplinsky and Morris (2009) and Dobbs et al. (2013b).
- 9 Any analysis of the relationship between export growth and development suffers from obvious endogeneity problems. The relationship depicted in Figure D.6 is nevertheless striking as it contrasts with the more common finding that primary exports are associated with poor economic performance (e.g. Wood, 2007).
- 10 The 12 countries covered are Mauritania (2001), Mozambique (2004), Niger (2008), Rwanda (2005), Sao Tomé and Principe (2006), Senegal (2003), Sierra Leone (2006), Sudan (2008), Tanzania (2005), Togo (2010), Uganda (2013) and Zambia (2005).
- 11 WTO International Trade and Market Access data accessed on 2 April 2014.
- 12 See also the discussion in Section D.4 on the role of standards in agricultural trade.
- 13 The sources of this information are Maertens and Swinnen (2014), based on Maertens et al. (2011), Maertens, 2009; Maertens and Swinnen, 2009; Colen et al., 2012.
- 14 For the sake of consistency, the same category definitions will be used for the discussion of trade flows and of tariff structures in this section.
- 15 See also similar findings in Liapis (2011).
- 16 LDC exports of agricultural goods have, for instance, grown by an annual 11 per cent in the years between 2000 and 2012 (see Table D.6). Growth was significantly stronger among food items (11.6 per cent) than among raw materials (6.4 per cent). Average annual growth (2010-12) was somewhat stronger, i.e. 12.8 per cent, for LDCs that are categorized by the WTO as "exporters of agricultural products". Within this group, annual export growth of agricultural products was strongest in Rwanda (22.4 per cent) and Burkina Faso (21.6 per cent).
- 17 See also Ng and Aksoy (2010b).
- 18 Their "low-income country group" overlaps to a significant extent with the "LDC group" in this section.
- 19 Iannotti and Robles (2011) as cited in International Food Policy Research Institute (2011).
- 20 Quote from Wood (2003), page 163.
- 21 See also the evidence presented in Szirmai (2012).
- 22 However, reports also indicate that there is a significant difference between expressed interest in investments and actual investments in farm operations (e.g. Arezki et al., 2011).
- 23 See, for instance, Delich and Lengyel (2014) on the role of the Fundación Pro Arroz in the export success of Argentinian rice.
- 24 WTO (2013). Average tariffs are based on best applicable tariffs (MFN and preferential treatments granted to LDCs and developing countries), and weighted using a standard export structure based on 2000-01 (WTO, 2013b).
- 25 The RRA is a measure based on price-related distortions to agricultural markets. It notably takes into account the output-price-altering equivalent of any product-specific input subsidies or taxes (Anderson et al. 2013, p. 428).
- 26 Order according to severity of bias from high to low according to Anderson et al. (2013), Figure 5.
- 27 Order according to severity of bias from high to low according to Anderson et al. (2013), Figure 5.
- 28 See Figure C.15 in WTO (2012) based on "ITC Business Surveys on NTMs". The countries covered by the surveys are Burkina Faso, Egypt, Jamaica, Kenya, Madagascar, Mauritius, Morocco, Paraguay, Peru, Rwanda and Uruguay.
- 29 Sometimes certification costs are the only costs developing countries have to incur, for instance in cases where traditional production methods meet importing countries' sustainability criteria (Gibbon and Lazaro, 2010).
- 30 Maertens and Swinnen (2014) report that Aloui and Kenny (2005) and Cato et al. (2005) have estimated the cost of compliance with SPS measures for tomato exports from Morocco and for shrimp exports from Nicaragua respectively to be only a small fraction, less than 5 per cent of total production costs, while Asfaw et al. (2010) find that investment costs related to GlobalGAP certification represent 30 per cent of annual crop income for vegetable farmers in Kenya. From their own interviews with asparagus exporters in Peru in 2009, Maertens and Swinnen (2014) estimate the cost of certification and audits related to a variety of private standards to be around US\$ 4,500 to US\$ 7,000 annually, but this cost is small relative to total production costs (less than 1 per cent).

- 31 Also called "monopsonistic markets".
- 32 Versus a 0.6 per cent tariff equivalent for textiles and 0.3 per cent for pharmaceuticals as reported in WEF (2014) based on USAID (2007).
- 33 Box adapted from Maertens and Swinnen (2014) based on Schuster and Maertens (2013a; 2013b).
- 34 For example, Schuster and Maertens (2013a; 2013b) have examined the relationship between certification and exports for the case of Peru. They do not find evidence of certification having a direct impact on firms' export performance.
- 35 See, for instance, Mc Millan et al. (2002) on the difficulties of farmers in Mozambique to take decisions regarding the planting of cashew trees in an uncertain policy environment.
- 36 For a recent overview of the resource curse literature, see Heinrich (2011).
- 37 This is partly confirmed by regression analysis that estimates the conditional correlation between GDP per-capita growth and two measures of natural resource exports (respectively, the share of fuels and the share of mining products in total merchandise trade) for the sub-sample of Sub-Saharan African countries, controlling for country- and year-fixed effects. The coefficient on the share of fuel in total merchandise trade turns from statistically not significant in the 1980-99 period to positive and statistically significant in the 2000-12 period. The coefficient on the share of mining products in total merchandise trade turns from negative and statistically significant in the 1980-99 period to statistically not significant in the period 2000-12.
- 38 Three of these countries became resource-rich after the beginning of the sample: Burkina Faso, Tanzania and Mozambique. Burkina Faso has become a gold producer since the mid-1990s. Tanzania and Mozambique are both on the Indian Ocean, where large discoveries of oil and natural gas were made recently. With production that could reach 100 million tonnes over the next decade, Mozambique is also primed to become a major exporter of coal to India and China (Africa Progress Panel, 2013).
- 39 Several studies have used the ratio of primary exports to total exports as a proxy for natural resource abundance. Wood (2007) criticizes this measure because the export ratio depends on a country's stock of physical and human capital, which in turn is strongly correlated with development success. To address this issue, the measure of natural resource abundance used in this section is total natural resource income as a percentage of GDP. It is defined as the difference between the value of production at world prices and total costs of production for oil, natural gas, coal, minerals and forestry.
- 40 Lee et al. (2012), however, point out that despite increased exploration efforts, world-class mineral discoveries have become less frequent. Moreover, as ore grades decline for base and precious metals, production costs are increasing significantly in mature mining countries, such as Chile and South Africa (Africa Progress Panel 2013).
- 41 Collier and Venables (2010) show the significant extent of under-exploration in Africa relative to OECD countries: as of the year 2000, some US\$ 114,000 of sub-soil assets were known to lie beneath the average square kilometre of the OECD. The equivalent figure for Africa was a mere US\$ 23,000. This reflects, among other things, the need for commitment technologies for resource exploration and exploitation.
- 42 See IMF (2012b) for an in-depth discussion.
- 43 According to Van der Bremer and Van der Ploeg (2013), the size of an intergenerational fund would then be larger if future generations are not expected to be much richer than current generations.
- 44 Increased spending during commodity price booms is, among other things, associated with real exchange rate appreciation (this is the so-called "spending effect" of the Dutch disease – see WTO (2010)). If a bust follows the boom, governments are then forced to cut spending and allow sharp devaluations of the real exchange rate (Sinnott et al., 2010).
- 45 Most studies focus on government spending because tax receipts are endogenous with respect to the business cycle. Indeed, as explained by Frankel et al. (2013), an important reason for pro-cyclical spending is that government receipts from taxes or mineral royalties rise in booms, and the government cannot resist the temptation or political pressure to increase spending proportionately, or more.
- 46 A cautionary note is in order. Analysing the cyclicity of fiscal behaviour in 28 developing oil-producing countries during 1990-2009 – and correcting for reverse causality between non-oil output and fiscal variables – Erbil (2011) provides evidence of strong pro-cyclicity of fiscal policy in oil-rich countries. The results are not uniform across income groups: expenditure is pro-cyclical in the low- and middle-income countries, while it is counter-cyclical in the high-income countries.
- 47 Imbs and Wacziarg (2003) find a U-shaped pattern, whereby countries in the earlier stages of development diversify production and countries above a certain level of income tend to re-concentrate production.
- 48 For a detailed explanation, see WTO (2010), especially Box 10.
- 49 In case of severe environmental degradation, the marginal environmental damage may be larger than the marginal benefit of extracting the resource, making it optimal to keep the resource in the ground. Technological shocks that threaten comparative advantage include the invention of substitutes or the opening up of new sources of supply. A notable example is hydraulic fracturing (fracking) technology, which has largely increased the availability of unconventional oil and, especially, natural gas reserves in the United States – see *The Economist* (2013).
- 50 Diversification into manufactured goods characterized countries such as Malaysia, Thailand, Indonesia and Sri Lanka (Coxhead, 2007). Diversification into services with high growth potential has been noticeable in some Gulf Cooperation countries in the last decades. Bahrain, for instance, developed a financial services industry following the relocation of the international banking community from Lebanon after the outbreak of the civil war in Lebanon in 1975. The development of aviation, tourism, real estate, recreational, educational, logistics and business services in countries such as Qatar (which will host the FIFA World Cup in 2022) and the United Arab Emirates constitute other notable examples. For an overall critical assessment of economic diversification in Gulf Cooperation countries, see Hvidt (2013).
- 51 Africa Progress Panel (2013) reports, for instance, that Africa's growth surge over the past decade was driven by extractive industries operating in enclaves with few links to the local economy and exporting largely unprocessed oil and minerals.
- 52 Aragon and Rud (2009), cited in Sinnott et al. (2010).
- 53 See Coxhead (2007) for an account of the Chilean experience in achieving growth by widening the range of resource-based exports to include new and more sophisticated products.
- 54 Beverelli et al. (2011) build a theoretical model showing that the appreciation of the real exchange rate (Dutch disease) can be escaped if patterns of specialization shift towards the manufacturing industries that use the natural resource more intensively. Using various sources of available information on oil discoveries in 132 countries, they provide empirical support for this hypothesis.
- 55 As noted by Sinnott et al. (2010), this is true of manufacturing sectors as well, explaining why enclave-like export processing zones can sometimes succeed in countries with poor business

II. TRADE AND DEVELOPMENT: RECENT TRENDS AND THE ROLE OF THE WTO

- environments. For an articulated discussion on the link between natural resource endowment and institutional quality, see WTO (2010).
- 56 Examples include: large investments in an oil pipeline and associated port facilities in Sudan; the construction of a deep-water port at Santa Clara, a railway track running 560 km from Belinga to the coast and a hydro-electric power plant (Gabon); the refurbishment of the rail network connecting Angola, the Democratic Republic of the Congo and Zambia.
- 57 For example, in Iraq the government allocated its service contracts for oil extraction through highly successful open and competitive auctions. The winning consortium at the Rumaila oil field will be taking US\$ 2 per barrel less than demanded by the nextbest bidder, which could result in a difference of US\$ 1.8 billion per annum to the Iraqi Treasury by 2017 (Sustainable Development Solutions Network (SDSN), 2013).
- 58 Guriev et al. (2011) analyse the determinants of nationalizations in the oil industry around the world during 1960–2006. They show, both theoretically and empirically, that high oil prices increase the likelihood of nationalization.
- 59 For a detailed discussion of the hold-up problem in natural resource sectors, see WTO (2010), Section E.
- 60 On the EITI and other transparency initiatives, such as the Kimberley Process Certification Scheme (KPCS), see WTO (2010), Section E.
- 61 Country fixed effects capture any country-specific characteristic that does not vary over time. Year fixed effects control for global business cycles.
- 62 Production of a barrel of shale oil can generate up to 1.5 tons of solid waste, which may occupy up to 25 per cent greater volume than the original shale (European Academics Science Advisory Council, 2007).
- 63 Over 150 billion cubic metres (or 5.3 trillion cubic feet) of natural gas are being flared and vented annually. The gas flared annually is equivalent to 25 per cent of the United States' gas consumption (Global Gas Flaring Reduction public-private partnership (GGFR), 2013). A public-private partnership called Global Gas Flaring Reduction Partnership (GGFR) was launched at the World Summit on Sustainable Development in Johannesburg in 2002. Poverty reduction is also an integral part of the GGFR programme, which is developing concepts for how local communities close to the flaring sites can use natural gas and liquefied petroleum gas that may otherwise be flared and wasted. The programme has already evaluated opportunities for small-scale gas utilization in several countries.
- 64 The Environmental Performance Index (EPI), constructed by the Yale Center for Environmental Law and Policy, ranks how well countries perform on high-priority environmental issues in two broad policy areas: protection of human health from environmental harm and protection of ecosystems.

E. Increased synchronization and globalization of macroeconomic shocks

This section describes the increased synchronization and spread of macroeconomic shocks in the last few years after what appeared to be a general moderation of volatility. It examines the role of global value chains in the transmission of macroeconomic shocks and looks at how export structures influence volatility. It describes how the economic crisis spread from developed to developing countries and how a coordinated response helped to limit the use of protectionist measures in the wake of the crisis. Despite suffering the greatest economic downturn since the 1930s, the world did not see a widespread resort to protectionism. Among other explanations for this was the existence of a set of multilateral trade rules.

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Some key facts and findings

- Macroeconomic volatility is bad for development because it reduces economic growth and adversely affects the distribution of income. Before the onset of the economic crisis in 2008, volatility had been declining in developing countries.
- The dramatic decline of trade in 2008–09 illustrated the dependency of developing economies on cyclical economic developments in developed countries, and vice versa. Beyond the fall in demand, other factors, such as the functioning of global value chains and the drying up of trade finance, explain the trade collapse.
- Despite the severity of the global economic crisis, it produced no large-scale outbreak of trade protectionism. Empirical evidence suggests that being a member of the WTO has acted as a restraint to the use of trade-restrictive measures during the crisis and its aftermath.
- G-20 developing countries contributed to the coordinated response to the crisis by using macroeconomic tools to stimulate their economies and by committing to refrain from erecting new trade barriers.
- The spread of global value chains has increased linkages among countries, creating a common interest in preventing the spread of protectionism. Raising trade barriers would have proven to be ineffective in promoting economic recovery in the medium to longer term.

1. Macroeconomic volatility of developing economies

Macroeconomic volatility is bad for development because it can reduce economic growth, make it difficult for households to smooth their consumption and adversely affect the distribution of income. Macroeconomic volatility is defined here as volatility in the cyclical component of GDP, i.e. volatility around the trend growth of GDP.¹

Beginning with the pioneering work by Ramey and Ramey (1995), a significant stream of literature has showed a negative relationship between macroeconomic volatility and growth (Martin and Rogers, 2000; Aghion and Banerjee, 2005; Hnatkowska and Loayza, 2005). The principal channel through which volatility reduces growth is through its damaging effect on capital accumulation as it makes the returns on investment in human and physical capital more uncertain. Welfare losses may also arise because of the difficulty in smoothing consumption as a result of investment constraints which tend to be more severe in developing countries (Loayza et al., 2007). A number of empirical studies have also found that volatility worsens income inequality (Inter-American Development Bank, 1995; Breen and Garcia-Penalosa, 2005; Laursen and Mahajan, 2005).

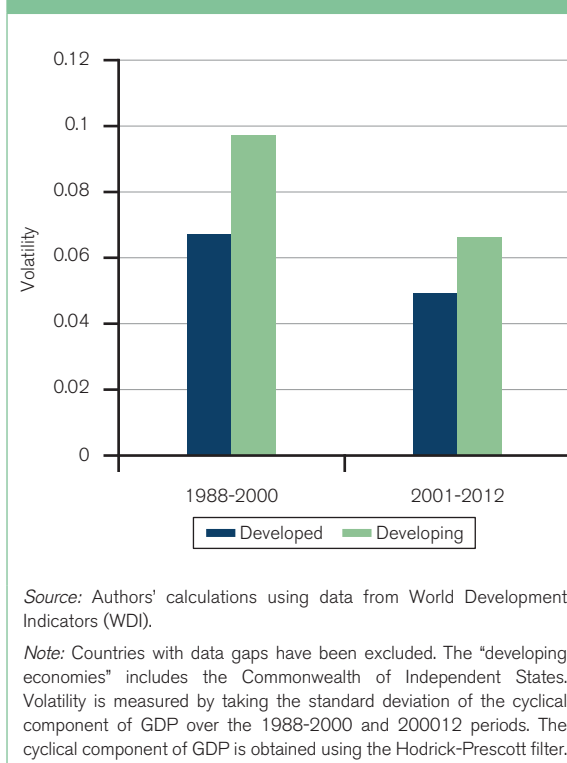
Developing countries as a group exhibit more macroeconomic volatility than developed countries (Agénor and Montiel, 2008). This is shown in Figure E.1 where the volatility of developed and developing countries before 2000 is compared with the period since then. In both time periods, developing countries had higher volatility than developed countries. For both groups of countries, volatility was lower in the later period. The sources of this volatility in developing countries can be broken down into domestic and external factors (Loayza et al., 2007).

External factors refer to the openness of a country to trade and its integration with the global economy in the areas of goods, services and finance. Domestic factors include the economic structure, particularly the supply side, institutions and the conduct of fiscal, monetary and exchange rate policy (Fatás and Mihov, 2013). These domestic and external factors are not necessarily independent. For instance, supply-side constraints may make a country dependent on a narrow range of commodities for export and fiscal revenues. If the country is open to trade and is a price taker in international markets (i.e. not sufficiently big to influence market prices), commodity price volatility can easily translate into macroeconomic turmoil. The following sections focus on trade openness and the interaction between sectoral concentration and openness as channels of macroeconomic volatility.²

(a) Trade openness and volatility

First, we examine trade openness and its effect on macroeconomic volatility. The trade literature suggests that openness can in some circumstances accentuate

Figure E.1: Volatility of developing countries, 1988–2000 and 2001–12

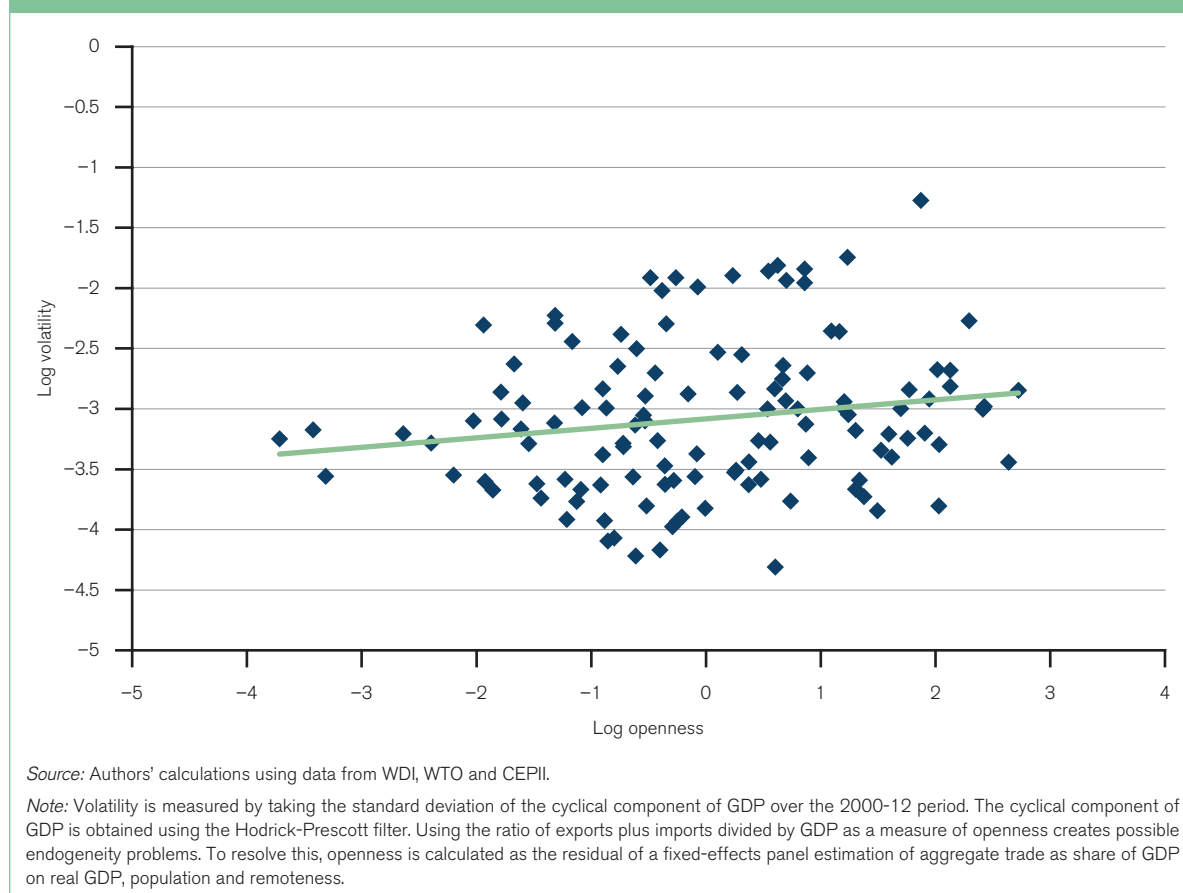


macroeconomic volatility but that it might also have a dampening effect. Countries with closer trade links tend to have more tightly correlated business cycles (Frankel and Rosen, 2008). This suggests that trade acts as a transmission mechanism for spreading a country-specific shock to others. In the context of the recent economic crisis, some have argued that trade was a major channel of transmission that made the crisis global (Lane and Milesi-Ferretti, 2010).

A number of authors have highlighted the role of global value chains in the transmission of macroeconomic shocks. For instance, Lee et al. (1997) have pointed to the "bullwhip effect",³ which refers to how small changes in final demand can cause a big change in the demand for intermediate goods along the value chain. Higher volatility can be driven by the increased vertical integration of value chains, which synchronizes business cycles (Di Giovanni and Levchenko, 2010). Greater trade openness also means more exposure to external economic shocks, with the most outward-oriented industries being the most vulnerable. Some empirical evidence for this is based on industry-level data (Di Giovanni and Levchenko, 2009). Focusing on small economies, Easterly and Kraay (2000) find that these countries exhibit greater macroeconomic volatility and that this is explained by their greater openness and sensitivity to terms-of-trade shocks.

Figure E.2 shows the relationship between trade openness of developing countries and volatility. For this particular sample of countries and time period, we obtain a positive

Figure E.2: Volatility and trade openness, 2000–12



relationship between openness and macroeconomic volatility although, as discussed below, one must be careful about this relationship.

However, there is also evidence that trade openness can reduce volatility. If country-wide shocks are dominant, the impact of trade on volatility can be negative because trade becomes a source of diversification (Tenreyro et al., 2012). For example, trade allows domestic goods producers to respond to shocks to the domestic supply chain by shifting sourcing abroad. Similarly, when a country has multiple trading partners, a domestic recession or a recession in any one of the trading partners translates into a smaller demand shock for its producers than when trade is more limited. The effect of openness also interacts with the underlying structure of exports, which is noted by Haddad et al. (2012). They show that, for a significant proportion of countries that have relatively diversified exports, the effect of openness on volatility is negative.

(b) Export structure matters

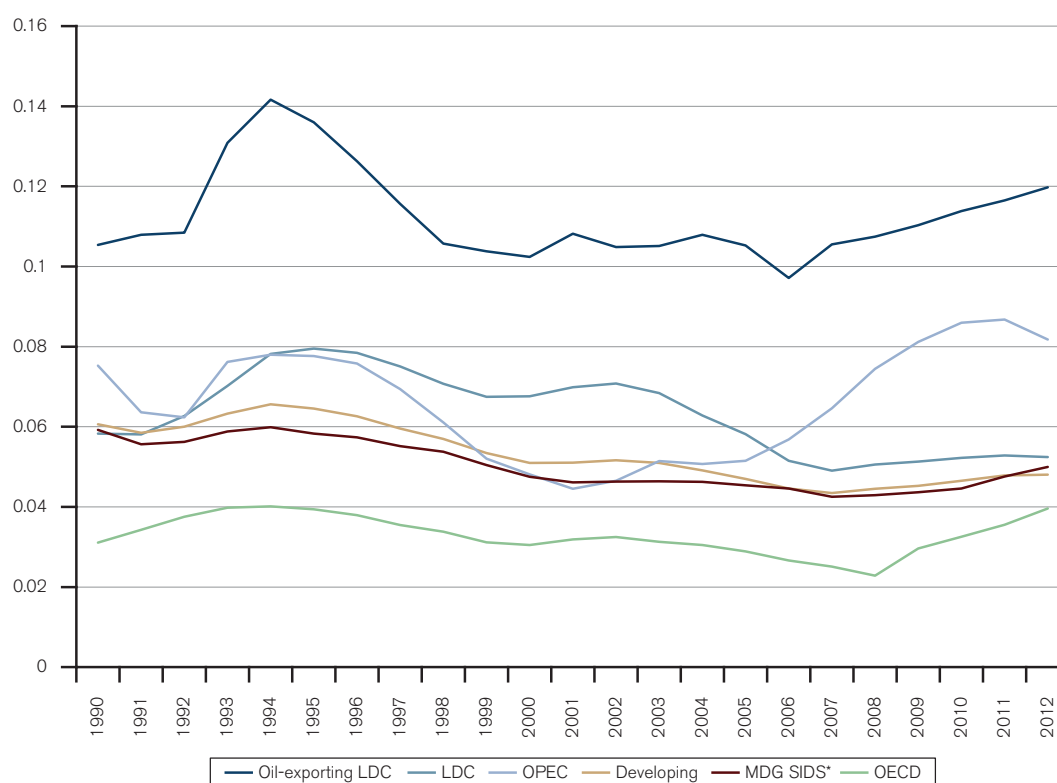
The link between macroeconomic volatility and the structure of a country's export basket has been examined in a number of studies. In the case of African countries, Kose and Riezman (2001) find that, because a significant proportion of their exports are concentrated in a narrow range of

primary commodities, terms-of-trade shocks account for 45 per cent of the volatility in their aggregate output. Moreover, adverse trade shocks cause prolonged recessions since they lead to a significant decrease in aggregate investment. In the context of the recent global crisis, commodity exporters faced demand and price declines that translated into greater output volatility. For developing countries that are part of manufacturing global value chains, producers of durable goods were badly affected by the global crisis because long-term investments were postponed (Baldwin, 2009). This translated into GDP volatility due to the large role of capital expenditures in aggregate demand.

(c) Declining volatility over time

Another feature of macroeconomic volatility in developing countries has been its decline since the mid-1990s before it spiked up again around the time of the Great Recession of 2008–09. Figure E.3 shows macroeconomic volatility over time by groups of countries. Members of the Organisation for Economic Co-operation and Development (OECD) are used to represent developed countries. The figure includes all developing countries as well as sub-groups of them – least-developed countries (LDCs), LDC oil exporters, members of the Organization of the Petroleum Exporting Countries (OPEC), and small island states. All the groupings of developing countries show higher volatility than OECD

Figure E.3: Volatility over time and country groups



Source: Authors' calculations using data from WDI.

Notes: Volatility in any given year is measured as the moving average of the last ten years of the standard deviation of real GDP per capita. The standard deviation is the most conventional way to measure volatility (e.g. Aizenmann and Pinto (2005)).

*MDG SIDS stands for Millennium Development Goals in Small Island Developing States.

members but there is a clear downward trend for all the groupings beginning around 1995.

This picture is consistent with the “great moderation”, the term used to describe the long-term decline in output and inflation volatility in the G-7 group of industrial countries that began at about this time (Kim and Nelson (1999); Blanchard and Simon (2001); Stock and Watson (2003); Stock and Watson (2005); Del Negro and Otrok (2008)). Figure E.3 suggests that the great moderation extended to developing countries as well. This may not be all that surprising given how developed countries are major export markets and principal sources of finance for developing countries. The moderation in volatility in industrial countries may have been transmitted through these channels to developing countries. Equally important, structural transformations occurring as part of the development process – Koren and Tenreiro (2007) refer to diversifying away from volatile sectors – contributed to make them less volatile over time.

To summarize, while developing countries are subject to more macroeconomic volatility than developed countries, this has been declining over time. More trade openness does not necessarily mean greater volatility as openness could also provide a source of diversification. However, concentration in a small number of exported

goods, particularly if they involve commodities or natural resources, is associated with more volatility. As explained in great detail in Section C, participation in global value chains bring great economic opportunities but it may also increase exposure to economic shocks.

2. Developing economies in the 2008–09 crisis

(a) More intertwined business cycles under the influence of global trade, finance and production

The 2008–09 trade collapse illustrated the dependency of developing economies on cyclical economic developments in developed countries, and vice versa (see Box E.1). Trade has been the transmission belt, at a global level, of the fall in the United States' and Europe's demand to producers in developing economies. The fall in US demand would have remained typical in its macroeconomic effects had it not been amplified by complex financial and microeconomic links. As noted by some authors (e.g., Baldwin, 2009), traditional demand models failed to explain the magnitude of the trade collapse as a result of the standard demand slump; other potential factors, partly on the supply side, are

Box E.1: Contagion and the limited understanding of interconnectedness at the time of the crisis

The 2008–09 crisis revealed an underestimation of the growing spill-overs between developing and developed economies. The concept of “decoupling” between developed and developing economies had even become popular prior to the collapse of Lehman Brothers in 2008, although some authors had embraced a more nuanced view of “divergence but not decoupling” (International Monetary Fund (IMF), 2008). Akin and Kose (2007) had estimated that spill-overs from advanced economies to developing economies had “decreased substantially” since the 1990s. In an effort to improve its understanding of “global interconnectedness” – in particular the spread of shocks – the International Monetary Fund (IMF) introduced a new macroeconomic surveillance framework in 2012 at the multilateral level, with the objective of better evaluating spill-overs in a world more open to trade and capital movements (International Monetary Fund (IMF), 2011a, 2011b, 2012a). One of the new approaches is to “connect the dots” of economies through “cluster network analysis”, focusing on the relations between three categories of actors: the global core group of economies (the “systemic-5”); clusters of economies within which connections are closer than outside (e.g. Nordic-Baltics); and “gatekeepers” or connectors that link clusters to one another and the core of the clusters (e.g. China appears as a gatekeeper to the Asian supply chains).

Table E.1: World exports of manufactured goods by product, 2001Q1–2010Q4
(year-on-year percentage change in current US\$)

	2008				2009				2010			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Manufactures	16	19	13	-10	-28	-30	-22	0	20	23	18	16
Iron and steel	16	30	48	7	-36	-54	-54	-30	7	43	33	23
Chemicals	20	25	22	-6	-23	-24	-17	8	26	20	12	11
Office and telecom equipment	10	13	7	-14	-28	-22	-15	8	31	30	24	17
Automotive products	16	16	4	-25	-47	-46	-28	5	42	37	18	15
Other machinery	20	22	14	-7	-26	-30	-25	-7	12	19	22	20
Textiles	10	9	3	-13	-27	-26	-17	0	17	18	17	14
Clothing	11	11	8	-2	-10	-15	-12	-7	-1	5	10	18

Source: WTO Secretariat estimates based on mirror data from the GTIS Global Trade Atlas database.

examined below (the drying up of trade credit, workings of modern supply chains and the wait-and-see attitude among consumers throughout the world).

The macroeconomic outcome of this crisis propagation has been the synchronization of business cycles across regions, including between developed and developing countries – during both the downswing and the upswing (see Figure E.4), in a mutually reinforcing manner.

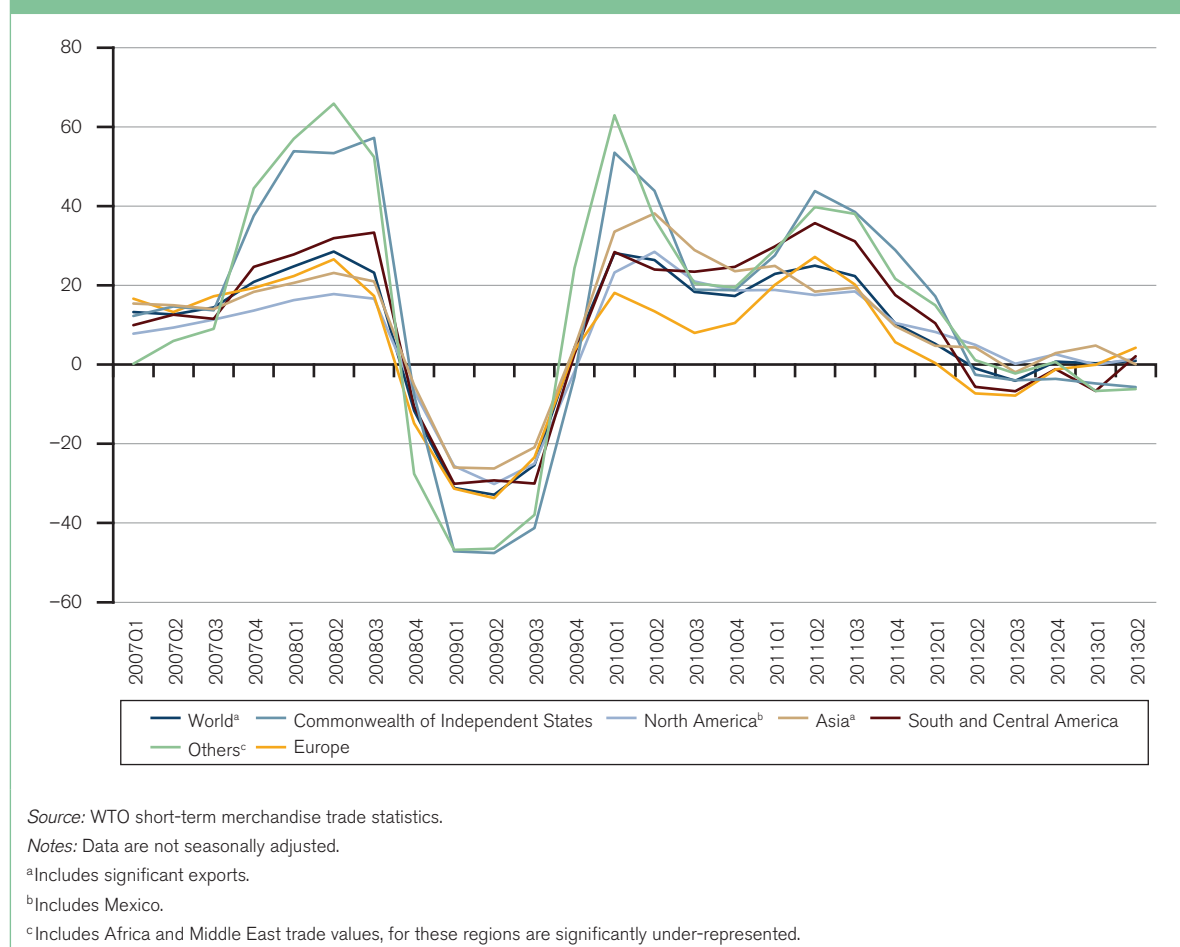
As indicated in Table E.1 and by Baldwin (2009), the “compositional” and “synchronized” nature of this dramatic fluctuation in demand explains, in part, its peculiar nature. The compositional effect is linked to the fact that the demand shock was large but very concentrated in a narrow category of goods (machinery, electronic and telecommunications equipment, automotive products) and intermediate products which are key components of today’s supply chains for the production of durable goods. During the crisis, global trade proved to be more cyclical than GDP because of the high density of such products (60 per cent of trade) in total trade. The trade collapse spread from downstream to upstream production as large developing countries, in which demand for manufactured

goods had fallen, reduced their purchases of commodities and raw material, often exported by low-income countries.

As noted above, research has suggested that only a share of the “great trade collapse” could be attributed to the drop in aggregate demand – 70 per cent, according to Eaton et al. (2011), leaving some 30 per cent to be attributed to other factors.

Among the other factors is the contraction of trade finance, linked to the credit crunch that resulted from the wider crisis of the international financial sector. Trade finance is the lifeblood of trade as most trade transactions are financed by some form of credit, guarantee and/or insurance. The role of trade finance has been highlighted by a growing stream of literature confirming the links between external (trade) finance vulnerability and the performance of traders (Chor and Manova, 2012; Amiti and Weinstein, 2011; Auboin and Engemann, 2012). The importance of this channel was discussed in the World Trade Report 2013 (Section II.D.3). Developing economies have been primarily affected by the contraction of trade finance, in line with the reassessment by global banks of their counterparty risk. In certain cases, big buyers ceased to extend payment or financing facilities to

Figure E.4: Quarterly merchandise exports per region, 2007Q1–2013Q2
(Year-on-year percentage change in US\$ values)



their suppliers in developing countries, which, in turn, could not rely on the local banking sector to support them (Auboin, 2009). Shortages of trade finance in some developing countries prompted the G-20 to provide US\$ 250 billion in trade finance liquidity and guarantees over two years.⁴

A consensus has also developed about the role of the “supply-chain” channel, which accounts for another important cause of the “great trade collapse”. With the unbundling of production, the “just-in-time nature” of vertically integrated production networks (as described by Baldwin) tends to lead to the spread of demand shocks more rapidly through “factory online”. Better information flows between links in the supply chain was another reason for the trade collapse, with real-time information on sales by retailers quickly becoming known to upstream producers. Di Giovanni and Levchenko (2010) and Li and Lu (2009) have described the process of vertical integration of production across countries.

Engel and Wang (2011) have documented the role of the composition of trade, notably that of durable goods, in the volatility of trade. Alessandria et al. (2012) have focused on the movement of trade that cannot be accounted for by composition. They have found that inventories account

for a sizable fraction of import collapses in the recent global recession. Partly because international trade takes time and is costly, firms engaging in it tend to hold larger stocks of inventories. These movements in inventories generate larger fluctuation in international trade than in GDP. Inventory movements among suppliers may actually be larger than for producers of final goods – inventory movements may be less optimal too.

Trade protectionism has had a much smaller influence than any of the factors mentioned above. Section E.3 analyses in depth the patterns of trade-restrictive measures taken since the economic crisis. The response appears to be muted given the severity of the crisis. Thanks to governments’ heightened awareness of the economic risks of protectionism, the existence of multilateral trade rules, which have made resorting to “open” protectionism more difficult, and the WTO’s commitment to increase trade monitoring, the rise of protectionism has been of limited intensity. Using product level data, Henn and McDonald (2011) show that protectionist measures on aggregate may have reduced global trade by only 0.2 per cent but they also highlight that backdoor or “murky” protectionism, through the use of behind-the-border non-tariff measures rather than tariff increases, as witnessed since 2009, still remains possible.

(b) Developing economies are part of the policy response

To be effective, a coordinated policy response requires the participation not only of developed economies but also of developing economies, given their weight in world output and trade. At the G-20 summit meeting in London (April 2009), G-20 developing countries agreed to participate with developed countries in the announced programme of fiscal and monetary stimulus to boost domestic demand (by some 2 per cent of GDP). They also committed to respecting the “stand-still” clause on protectionism, thereby refraining from using policy space allowed by their WTO commitments (such as raising tariffs to their “bound” limits and using flexibilities in the area of non-tariff measures). By keeping their markets open and allowing some predictability of market access in difficult times, G-20 developing countries have played their part in the resolution of the crisis (see Section F.3(d)).

Low-income countries have been on the receiving end of the global economic shock, despite having little or no responsibility for its origins. They have suffered from knock-on effects such as reduced trade finance availability (Auboin, 2013), reduced remittances from workers living abroad, and lower demand for raw materials and commodities. Dabla-Norris and Gündèz (2012) have showed that the amplitude and frequency of economic shocks tend to be higher in low-income countries than in advanced and developing country G-20 members. The authors argue that standard models in which negative shocks result in a quick bounce back to earlier levels of income do not apply to low-income countries, which do not have the policy instruments, adequate reserves and diversified economic structures to mitigate the impact of such large external crises.

(c) Low-income countries

Thanks to macroeconomic stabilization achieved in the decade leading up to the economic crisis, coupled with improved fiscal control and debt relief received under the Heavily Indebted Poor Countries Initiative set up by the International Monetary Fund (IMF) and the World Bank in 1996, low-income countries have been in a better position to use fiscal space and stimulate their economies in the face of falling international demand than in previous downturns. Also, the long period of commodity price increases, peaking in late 2007, has allowed many low-income countries relying on such resources to substantially improve balance of payments positions and foreign exchange reserves and, in certain cases, build up fiscal funds to cushion against future crises.

However, in the face of strong macroeconomic stress in 2009, it was clear that a prolongation of the crisis would threaten the remarkable achievements of low-income countries. In asking for additional resources to support

them, the IMF argued that the “financial crisis, coupled with the sharp rise of food and fuel prices in 2007, has (already) created much higher financing needs (for low-income countries) that the international community has to meet” (International Monetary Fund (IMF), 2009).

(d) Faster recovery for developing economies in the wake of the crisis

Developing economies have been able to recover appreciable rates of growth since 2010. This is due in part to the continuation of their internationalization and the fact that their exports have rebounded, on average, faster than those of developed countries thanks to the higher demand from other developing countries. As indicated by Figure E.5, India and Indonesia benefited from higher export growth than the United States and the European Union in the recovery period immediately after the crisis – i.e. 2010. China represents the average as demand for its exports is shared between the US and EU markets, on the one hand, and other G-20 developing countries, on the other hand. During 2010 and until mid-2011, Brazil’s exports recovered at roughly the same pace as the best performers.

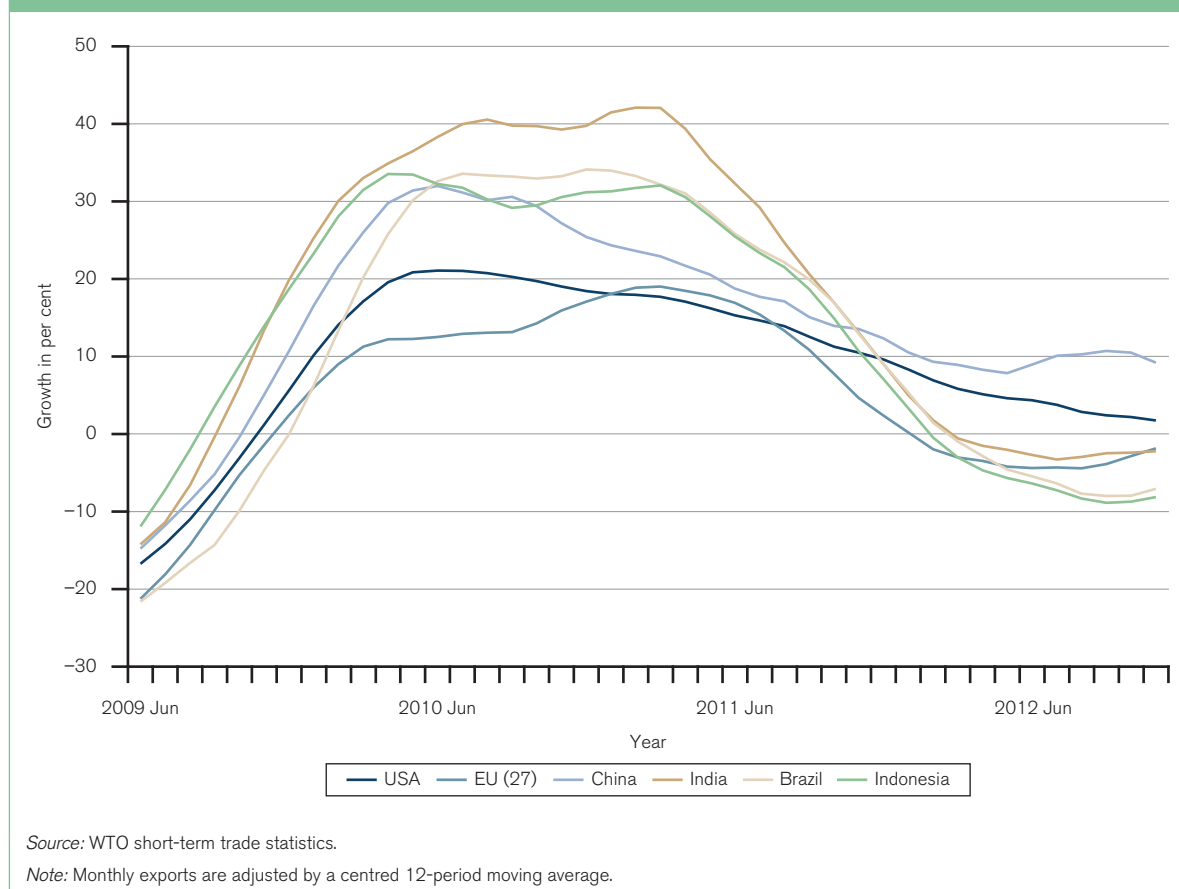
There is little doubt that the combination of strong internal growth (including domestic demand), the growing share of G-20 developing countries in global trade and particularly in intra-regional trade, and better macroeconomic fundamentals have contributed to ensuring higher growth levels in developing economies than in developed countries since mid-2011. As noted by Cattaneo et al. (2010), large corporations are reorienting their production and exports from developed towards G-20 developing countries, where demand is the most dynamic. Smaller developing countries, in the vicinity of the larger developing countries, are also orienting their exports to these regional clusters to benefit from their higher growth.

Figure E.6 underlines this finding via bilateral trade growth rates of selected G-20 developing countries. In all four of these countries (Brazil, China, India and Indonesia), export growth to other G-20 developing countries was significantly higher than growth to developed countries. This is the case for China and India especially. In the recovery period immediately after the crisis, China’s exports to Brazil and Russia were particularly high. In the same period, India’s exports to Indonesia and Brazil peaked.

3. Trade policy reaction to the crisis

A number of trade theorists have argued that when trade agreements are self-enforcing,⁵ levels of protection are likely to be counter-cyclical, i.e. in the opposite direction to the business cycle (Bagwell and Staiger, 2003a). The explanation offered by Bagwell and Staiger is that when economies and trade are booming and expected

Figure E.5: Recovery of total exports after the crisis, 2009–12
(current US\$)



to continue to do so, the long-term gains of partners keeping to their commitments are substantial and so countries have a strong incentive to maintain open trade policies. However, when economic growth is slow or contracting, future benefits will be much lower. Under these circumstances, countries tend to shift towards protectionism, since retaliation from trading partners for disregarding commitments does not impose as much of a cost. Put another way, the ability of a trade agreement to constrain countries from taking protectionist actions diminishes as a downturn deepens. Evidence of this behaviour – particularly the use of trade remedies such as anti-dumping, countervailing and safeguard measures – can be found in Takacs (1981), Grilli (1988), Knetter and Prusa (2003), Feinberg (2005), and Bown and Crowley (2013a; 2013b). The most notable dissent to this hypothesis comes from Rose (2012), who claims to find no such pattern in a panel of data covering over 60 countries and three decades.

Given the presumption of the counter-cyclical nature of trade protectionism, it is striking that the Great Recession of 2008–09 did not trigger a protectionist surge similar to what was experienced in the Great Depression of the 1930s or even to what could have been predicted based on countries' past experience. Instead, developing (and developed)

countries adopted a coordinated response characterized by strong macroeconomic stimulus programmes and low levels of trade restrictions.

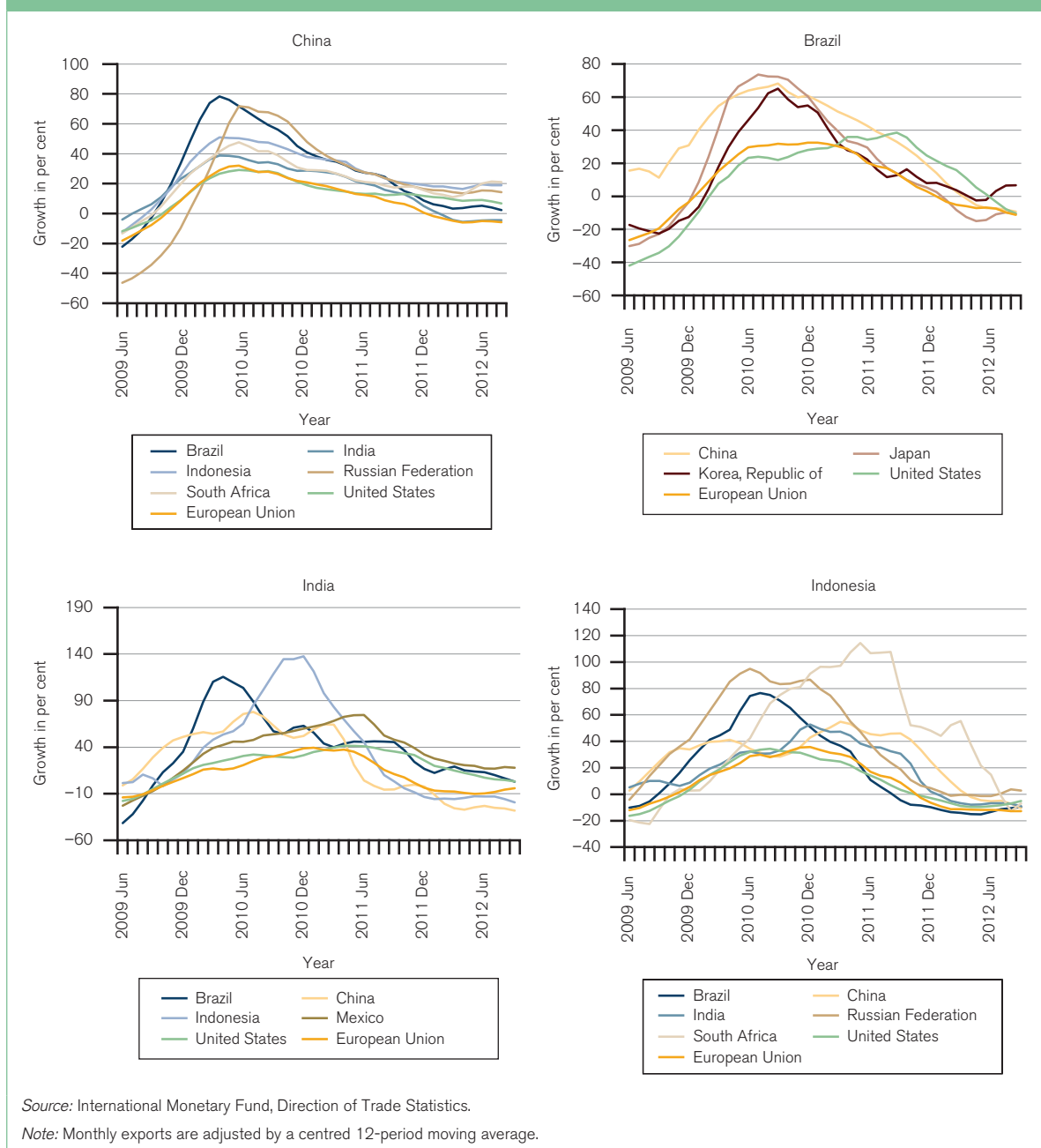
(a) Trade policy response

As indicated above, the trade policy response to the economic crisis was marked by the absence of a surge of protectionism. Box E.2 illustrates the potential risks involved if wide-scale protectionism had erupted. Some developing countries took trade-restrictive measures, but not to the extent that past behaviour would have suggested. Furthermore, data show that developing countries also took trade-opening measures. The focus of the analysis below is on the developing countries in the G-20, not only because they are economically important but also because a lot more information is available on their trade actions.

(i) Pattern of trade-restrictive measures

We begin by looking at recent empirical research on the trade policy response of developing countries in the wake of the crisis. The study by Bown and Crowley (2013a) focuses on the trade remedy actions (anti-dumping, countervailing and safeguard measures) taken by a group of

Figure E.6: Annual growth of bilateral exports after the crisis, 2009–12



economically important developing countries – Argentina, Brazil, China, Colombia, India, Indonesia, Malaysia, Mexico, Peru, the Philippines, South Africa, Thailand and Turkey. From 1995 to 2010, they find a counter-cyclical pattern in the use of trade remedy measures during economic downturns. This is consistent with the predictions of Bagwell and Staiger (2003a). When they focus, however, on the crisis period of 2009–10, the counter-cyclical relationship is reversed as these developing countries actually imposed fewer trade restrictions during this period of economic weakness.⁶ If a wider set of measures is taken into account, the data suggest that there was not a big surge in these measures either. Gawande et al. (2011) look at both applied tariffs and anti-dumping initiations by

seven large G-20 developing countries and also arrive at a similar conclusion: “Strikingly, despite the trade collapse, the 2008 crisis and its recessionary aftermath did not fuel protectionism.”⁷

Confirmation of these conclusions can be sought by examining the database of trade measures recorded by the WTO through its regular trade monitoring reports. The WTO produces two series of reports: WTO reports on trade-related developments covering the WTO membership and observers, and joint reports with the OECD and the United Nations Conference on Trade and Development (UNCTAD) on trade and investment measures taken by G-20 economies. These series of reports were started

Box E.2: How extensive could trade protectionism have been during the crisis?

A number of different scenarios could have unfolded during the global crisis. If the trade policy response of the Great Depression had been followed, the impact would have been massive and prolonged. Eichengreen and Irwin (2010) describe the effect of the beggar-thy-neighbour policies of the era as “destroying”. Between 1929 and 1932, world trade fell 25 per cent. Nearly half of this reduction was due to higher tariffs and non-tariff barriers to trade. They estimate that global trade failed to regain its 1929 peak (in volume terms) until after the Second World War. Even if the response to the recent crisis had been less dramatic, the effects would still have been severe. Bouët and Laborde (2008) simulate a situation where the tariffs applied by major countries are raised up to their WTO bindings. In this scenario, no WTO member would be violating their commitments since tariffs would not exceed the country’s “bound” levels, yet there would be a huge impact on trade. They estimate that applied tariff rates would double, with world trade declining by 7.7 per cent (about US\$ 1.8 trillion) and world welfare by 0.5 per cent (US\$ 353 billion). This estimated reduction in trade does not include what the consequent fall in demand would have engendered.

in the wake of the 2008 crisis. Four types of measures are collected in the database: (a) trade remedy measures (anti-dumping, countervailing and safeguard measures); (b) import measures (tariffs, taxes, customs procedures, quantitative restrictions and other import measures); (c) export measures (duties, export restrictions and other export measures); and (d) other measures (local content requirements in domestic production and other measures). The database allows one to distinguish whether an action is trade liberalizing or trade restrictive.

Two qualifications need to be made. First, the WTO’s monitoring reports only include trade policy measures covered by multilateral trade rules and consequently omit other measures that can have discriminatory trade effects. Governments intent on raising barriers to trade and prevented from using a particular policy instrument because of multilateral rules have the leeway to use other measures, unconstrained by WTO rules, which will have similar discriminatory trade effects (the problem of “policy substitution”).⁸ This is an important point when the issue of financial sector bailouts is discussed below. Secondly, as suggested by Gregory et al. (2010) and Henn and McDonald (2011), while the coverage of trade-restrictive measures may be small, the impact of the measures on the affected trade can be significant. They estimate that trade between partners subjected to the measures decreased by 5 per cent to 8 per cent relative to trade in the same product among partners not subject to similar measures.

Figure E.7 shows the number of new restrictive trade measures taken by G-20 countries in 2009–12. For the G-20 economies, the most utilized measures against imports are trade remedy measures. However, Bown and Crowley’s research makes it clear that use of trade remedy measures during the crisis was significantly less than what would have been predicted based on past responses to business cycles.

While useful, the number of measures may not give a good indication of the measures’ possible impact on trade. To complement these data, we calculate the amount of trade covered by the restrictive trade measures implemented that year, while recognizing that this is also an imperfect measure of their impact. To see this, suppose the trade-restrictive

measure manages to eliminate imports altogether. In this case, the trade covered by the restrictive measure is zero which can lead to the mistaken conclusion that the measure has no effect on trade. The trade data are matched with the trade measures in the WTO monitoring database and are shown in Figure E.8. Note that the trade coverage data exclude exports and are available only for 2010–12.

In contrast to the count data, which suggest that the most utilized measures were trade remedy instruments, the trade coverage data imply this finding is only true for developed G-20 countries. G-20 developing countries, in contrast, tended to rely on other measures, such as import duties, customs procedures and even local content requirement rules. Interestingly, the trade coverage of their restrictive measures appeared to grow over time. Nonetheless, in any given year the new measures covered only a small amount of world imports. In 2012, for example, the new measures enacted that year by the G-20 economies amounted to about 1.3 per cent of world imports. G-20 developing countries’ restrictive measures affected a larger share of world imports than developed countries’ measures.

(ii) Liberalization measures

The analysis of trade-restrictive measures only gives half of the story since the other feature of the policy response to the crisis is the simultaneous lowering of trade barriers. Figure E.9 shows the number of liberalizing measures taken by G-20 countries in the midst of the crisis. It shows that liberalization by developed and developing G-20 countries took the form of reductions in tariffs and quantitative restrictions and terminations of trade remedy measures.

The amount of trade covered by these liberalization measures is shown in Figure E.10. The first point to note about the figure is that trade coverage data of liberalizing measures in the WTO monitoring database are only available from 2012. Based on this, it appears that most of the liberalization by G-20 developing countries has been in the area of reductions in tariffs and quantitative restrictions while for developed countries it has been in

Figure E.7: Number of restrictive trade measures, 2009–12

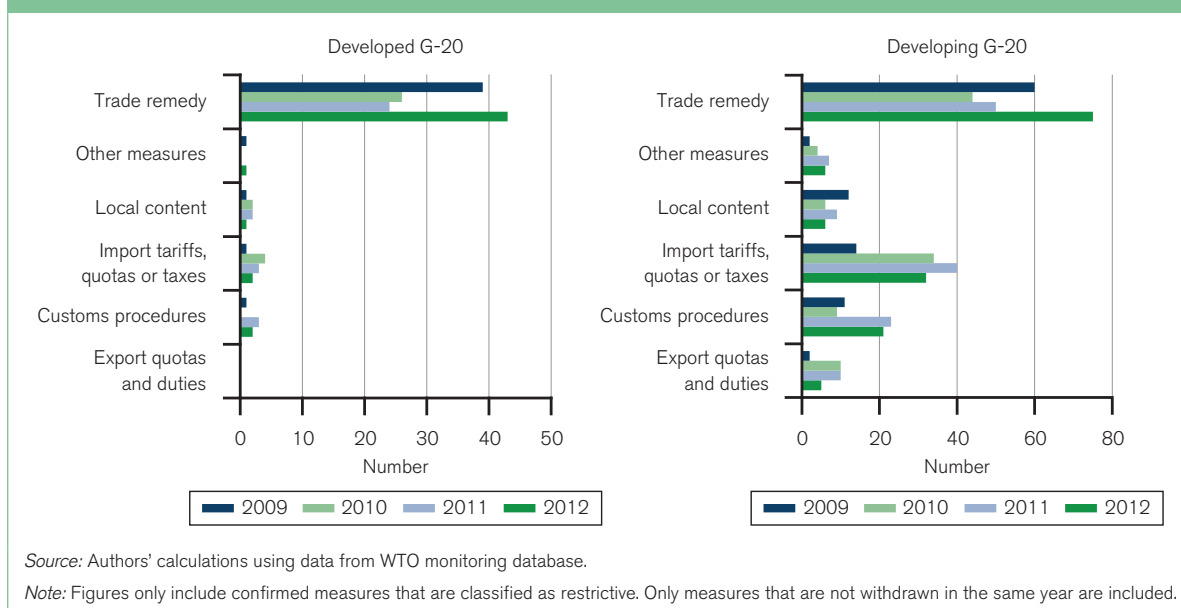
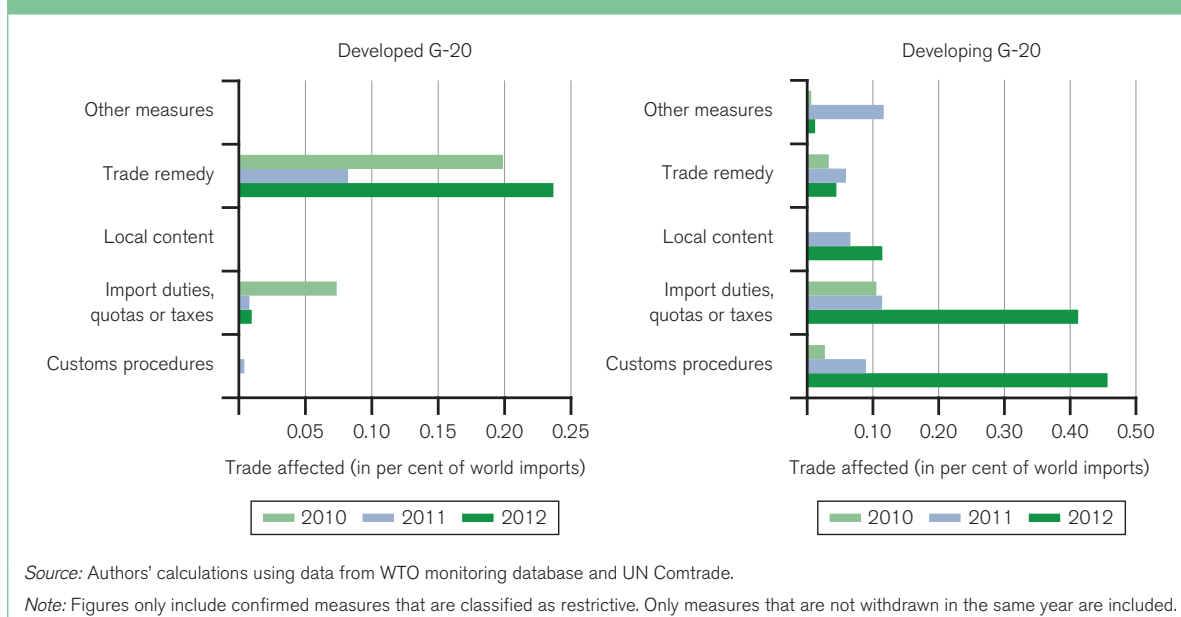


Figure E.8: Share of world trade covered by trade-restrictive measures, 2010–12 (per cent of world imports)



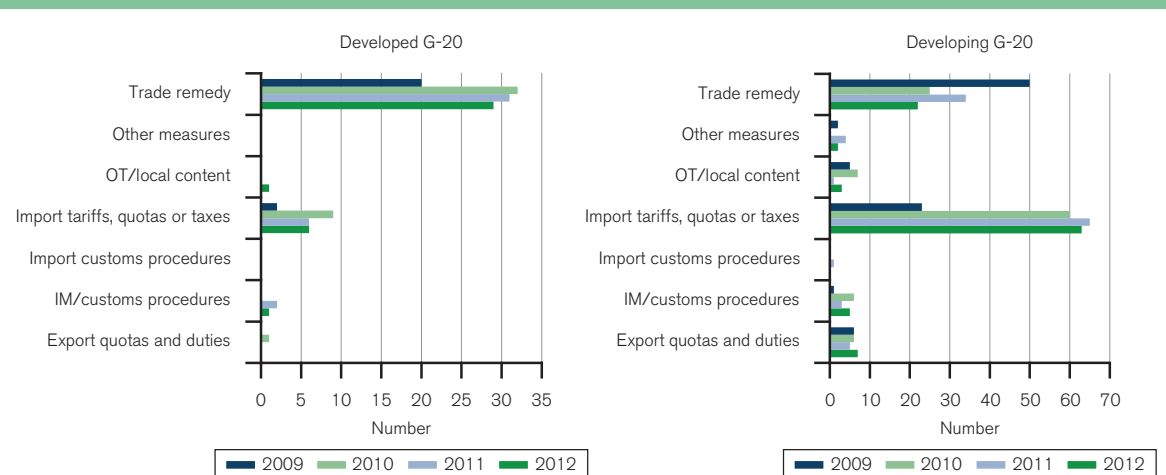
the area of trade remedy instruments. Secondly, G-20 developing countries appear to have undertaken more liberalization than the developed G-20 countries. In 2012, for example, the amount of trade covered by their liberalization measures was about 0.9 per cent of world imports while the corresponding amount for developed countries was about 0.1 per cent.

This focus on the annual flow of trade-restrictive measures is ultimately less illuminating than understanding what is happening to the total number of measures. The WTO's Monitoring Report on G-20 Trade Measures, issued on 18

December 2013, observes that, of all the trade-restricting measures imposed since October 2008, only about 20 per cent have been rolled back. The result is that the measures remaining in place are estimated to cover around 3.9 per cent of world merchandized imports and around 5 per cent of G-20 imports. Thus, while the number or trade coverage of trade-restrictive measures in any given year may be small, they can become a serious impediment to trade if they are not rolled back.

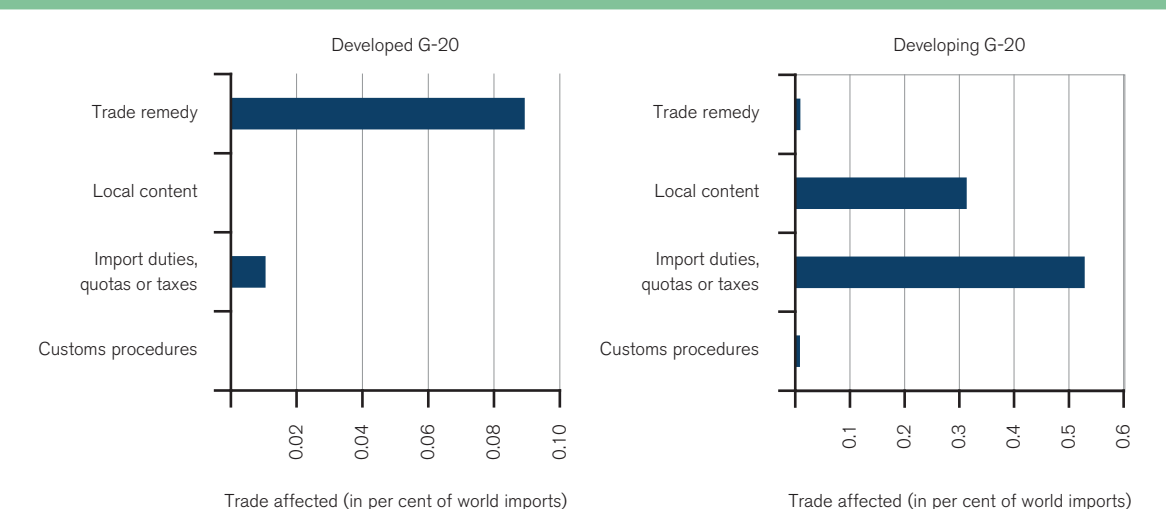
Overall, the trade flow information from the WTO monitoring database suggests that the share of world trade affected

Figure E.9: Number of liberalizing trade measures, 2009–12



Source: Authors' calculations using data from WTO monitoring database.
 Note: Includes only measures that were confirmed by G-20 countries and that are not withdrawn in the same year. Following the practice of the WTO monitoring reports, termination of a trade remedy measure is counted as a liberalizing measure.

Figure E.10: Share of world trade covered by trade-liberalizing measures, 2012 (per cent of world imports)



Source: Authors' calculations using data from WTO monitoring database and UN Comtrade.
 Note: Includes only measures that were confirmed by G-20 countries and that are not withdrawn in the same year. Following the practice of the WTO monitoring reports, termination of a trade remedy measure is counted as a liberalizing measure.

by restrictive trade measures is not high and that G-20 developing countries also liberalized their trade during this period much more than developed countries. The analysis is consistent with the conclusions drawn by many others that there was no significant increase in trade protectionism during the crisis.

(b) Coordinated macroeconomic response

One possible reason for this result is countries' use of macroeconomic policies which would have dispensed with the need to use trade policy to manage the adverse impact

of the crisis on incomes and jobs (Eichengreen and Irwin, 2010). In the early phase of the crisis, this macroeconomic response was quite coordinated.

The early post-crisis period (2009–10) saw the G-20 countries increase discretionary fiscal expenditures by an average of 2 per cent of GDP (see Table E.2), although a few countries' stimulus programmes exceeded 5 per cent of GDP. Based on the evidence in this table, the amount of fiscal stimuli (as a share of GDP) did not differ significantly between developed and developing country members of the G-20.

Table E.2: G-20 economies' crisis-related discretionary fiscal stimulus programmes^a
 (per cent of GDP)

Country	2009	2010	2011
G-20 average ^b	2.1	2.1	1.1
Developed	1.9	2.1	1.2
Developing	2.4	2.0	0.9

Source: Authors' calculations using data from IMF Fiscal Monitor, November 2010.

^a Discretionary spending is calculated relative to pre-crisis IMF baseline.

^b PPP-GDP weighted.

 Table E.3: Amounts pledged or utilized for financial sector support
 (per cent of 2009 GDP unless otherwise noted)

Country	Capital injection		Purchase of assets and lending by treasury ^a		Direct support ^b	Guarantees ^c	Asset swap and purchase of financial assets, including treasuries, by Central Bank
	Pledged ^d (A)	Utilized	Pledged ^d (B)	Utilized	Pledged ^d (A+B)	Pledged ^d	Pledged ^d
G-20 average	2.6	1.3	1.4	0.9	4.0	6.4	4.6
Developed	3.8	2.0	2.4	1.4	6.2	10.9	7.7
(US\$ billions)	1,220	639	756	461	1,976	3,530	2,400
Developing	0.7	0.3	0.1	0.0	0.8	0.0	0.0
(US\$ billions)	90.0	38.4	18.0	5.0	108.0	7.0	0.0

Source: IMF Fiscal Monitor, May 2010.

^a Excludes treasury funds provided in support of central bank operations.

^b Includes some elements that do not require up-front government financing.

^c Excludes deposit insurance provided by deposit insurance agencies.

^d "Pledged" indicates announced amounts and not actual uptake.

A salient feature of the fiscal policy response was the enormous assistance given to the financial sector and some manufacturing industries (e.g. the auto industry). In the financial sector, the support measures included the injection of capital and extension of loans to banks, provision of guarantees, and swapping government securities for the illiquid assets held by banks. There was a huge difference in the amount of support extended by developed G-20 countries and that provided by G-20 developing countries. In part, this reflected the fact that the crisis originated in and was centred on a number of the developed economies. The pledged amounts were quite sizeable, with guarantees given by the developed G-20 countries to the financial sector, for example, estimated to equal 11 per cent of their GDP (see Table E.3). On none of the support measures listed in Table E.3 did the amount pledged by G-20 developing countries reach 1 per cent of their GDP.

To the extent that the financial sector bailout prevented a financial meltdown and shored up aggregate demand, it helped sustain developed countries' demand for

imports, including those originating from G-20 developing countries. However, one concern is whether these measures represented a form of policy substitution where, in lieu of trade measures subject to multilateral rules, other measures which can have similar discriminatory trade effects were used instead. Rose and Wieladek (2011) have argued that one consequence of the bailouts has been to reduce cross-border lending and to lead to a form of financial-sector protectionism. Furthermore, these financial sector bailouts may have had discriminatory effects on merchandise trade as well.

Chor and Manova (2012) have shown that countries experiencing greater financial stress, as reflected for example by higher interbank lending rates, exported less to the United States during the peak of the crisis. These effects were especially pronounced in sectors that required extensive external financing, with few collateralizable assets or limited access to trade credit. This suggests that countries which provided sizeable support to their financial sector, which were primarily the advanced economies, would have

been able to better maintain their level of exports, thus potentially displacing exports from developing countries.

The monetary response to the crisis was more pronounced, particularly in developed countries. Short-term interest rates were reduced as expected. In addition, central banks in advanced countries turned to unconventional monetary instruments – “quantitative easing”. This involved purchases not only of long-term government securities but of more risky and illiquid assets such as mortgages and mortgage-backed securities held by troubled financial institutions. The chief reason for using unconventional policy was that the traditional instrument of monetary policy, the short-term interest rate, had already been reduced to its lowest limit. Some understanding of the magnitude of this unconventional monetary response can be gleaned from the expansion in the size of the balance sheets of the Federal Reserve and the Bank of England.

One side of the balance sheet reflects the assets owned by the bank – government securities, mortgages, mortgage-backed assets, etc. – while the other side reflect its liabilities, the monetary base and equity. The expansion of the central bank’s balance sheet therefore reflects an increase in its asset holding (and a corresponding increase in monetary creation). Based on the information available between the end of July 2007 and early 2013, this expansion was enormous as the balance sheets of the Federal Reserve and the Bank of England grew nearly fourfold (from US\$ 877 billion to US\$ 3.2 trillion) and fivefold (from 82 billion to 404 billion) respectively.

(c) Why was there no increase in trade protectionism?

In the Bagwell-Staiger (2003) model of counter-cyclical trade policy, there are no other instruments apart from trade policy for countries to manage the business cycle. This suggests a way to reconcile the theory with the facts. What the coordinated macroeconomic response did was to mitigate the downturn in the business cycle. The fact that nearly all the G-20 countries ramped up fiscal spending and cut interest rates meant that the stimulus was global and coordinated, thus helping to mitigate more effectively global economic weakness. Box E.3 discusses the role of global policy coordination and trade reform in addressing current account imbalances, which has been identified as one of the possible factors that contributed to the global crisis. In the context of the Bagwell-Staiger model, this means that the long-term benefits from trade cooperation remain substantial so the incentives remained tilted towards cooperation and against short-term opportunism.

An alternative explanation for the limited trade protectionism in response to the crisis is provided by Limão and Maggi (2013). In their view, the usual terms-of-trade motivation of countries to deviate from a trade agreement is counteracted by an aversion to risk or uncertainty. This uncertainty is greater during times

of economic volatility and made worse if there are no restraints on the behaviour of trade partners. Since trade agreements place constraints on that behaviour, agreements become more valuable during periods of economic volatility when uncertainty rises. The implication is that governments have more to gain by sticking to a trade agreement as the economic environment becomes more volatile.

At the height of the crisis in 2008, G-20 leaders made a commitment (“standstill commitment”) to “refrain from raising new barriers to investment or to trade in goods and services, imposing new export restrictions, or implementing World Trade Organization (WTO) inconsistent measures to stimulate exports”.⁹ There is some empirical work that finds support for the role of trade agreements in containing protectionism during the crisis. Gawande et al. (2011) find that WTO membership curbed increases in the tariffs applied by several large G-20 developing countries during the crisis and may even have been responsible for actual declines.¹⁰ Baccini and Kim (2012) show that countries which shared membership in the WTO as well as preferential trade agreements had a lower number or frequency of trade-restrictive measures taken during the economic crisis.

Another issue taken up in the Gawande et al. (2011) study is the role that global value chains may have played in limiting the extent of the protectionist response to the crisis. The operation of global value chains requires upstream firms that are participating in the production network to have access to imported intermediate goods. Home governments keen to advance the interests of these exporters will not want to increase tariffs on the imported inputs that they use. Furthermore, in global value chains, a country’s exports are also inputs to producers in foreign countries. These foreign producers will have an interest in seeing low or zero tariffs in the source country as this will keep their input costs low and so will lobby against trade restrictions. The Gawande et al. study finds strong empirical evidence that the demand for cheap inputs by downstream users and the demand for a country’s exports by vertically specialized exporters in partner countries exerted countervailing pressure against increases in applied tariffs.

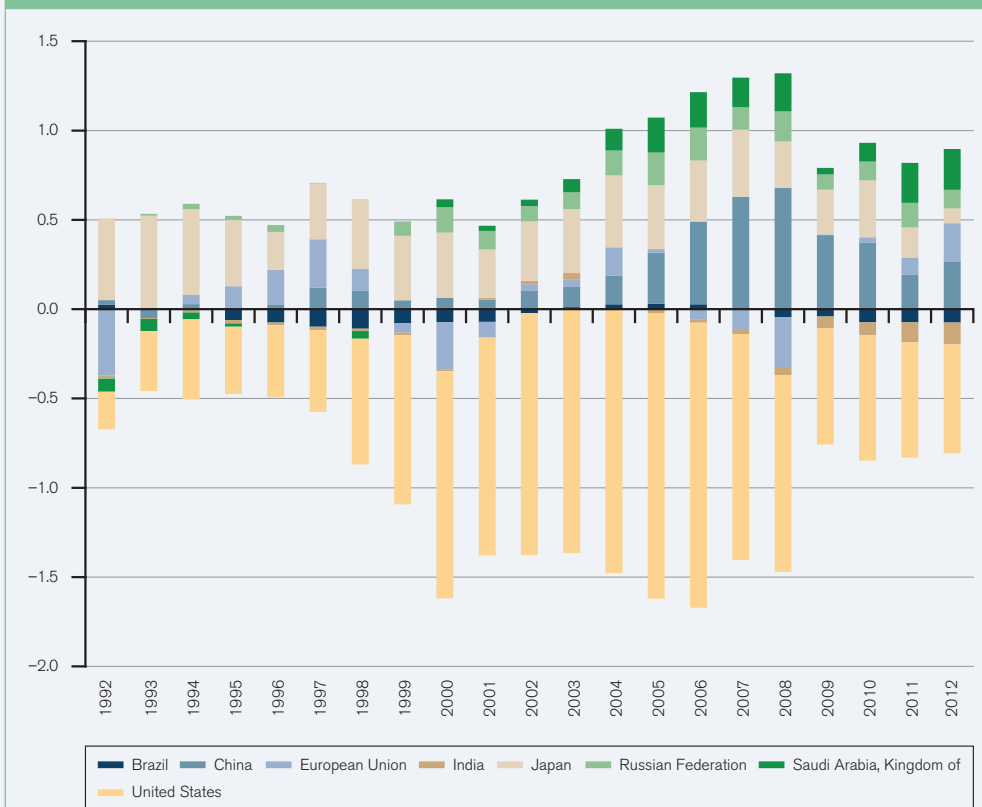
Finally, another perspective on the muted protectionist response by developing countries is whether protectionism would have been helpful in promoting economic recovery. If it would not, this would provide another explanation for why we have not seen a reincarnation of Depression-era protectionism. The crisis has still to run its full course so any conclusions will be preliminary in nature.

One measure of economic recovery is the growth in trade. The relationship between export performance and G-20 developing countries’ trade policy stances, represented by the number of trade-restrictive measures, is shown

Box E.3: Policy solutions to global imbalances

Large and enduring current account¹¹ imbalances (both surpluses and deficits) have been observed in many leading economies since the 1980s. The evolution of global imbalances since 1990 is illustrated by Figure E.11, which shows current account surpluses and deficits as a percentage of global GDP for large developed and developing economies, including Brazil, China, the European Union, India, Japan, Russia, Saudi Arabia and the United States.¹²

Figure E.11: Current account surpluses/deficits of selected countries (in per cent of world GDP)

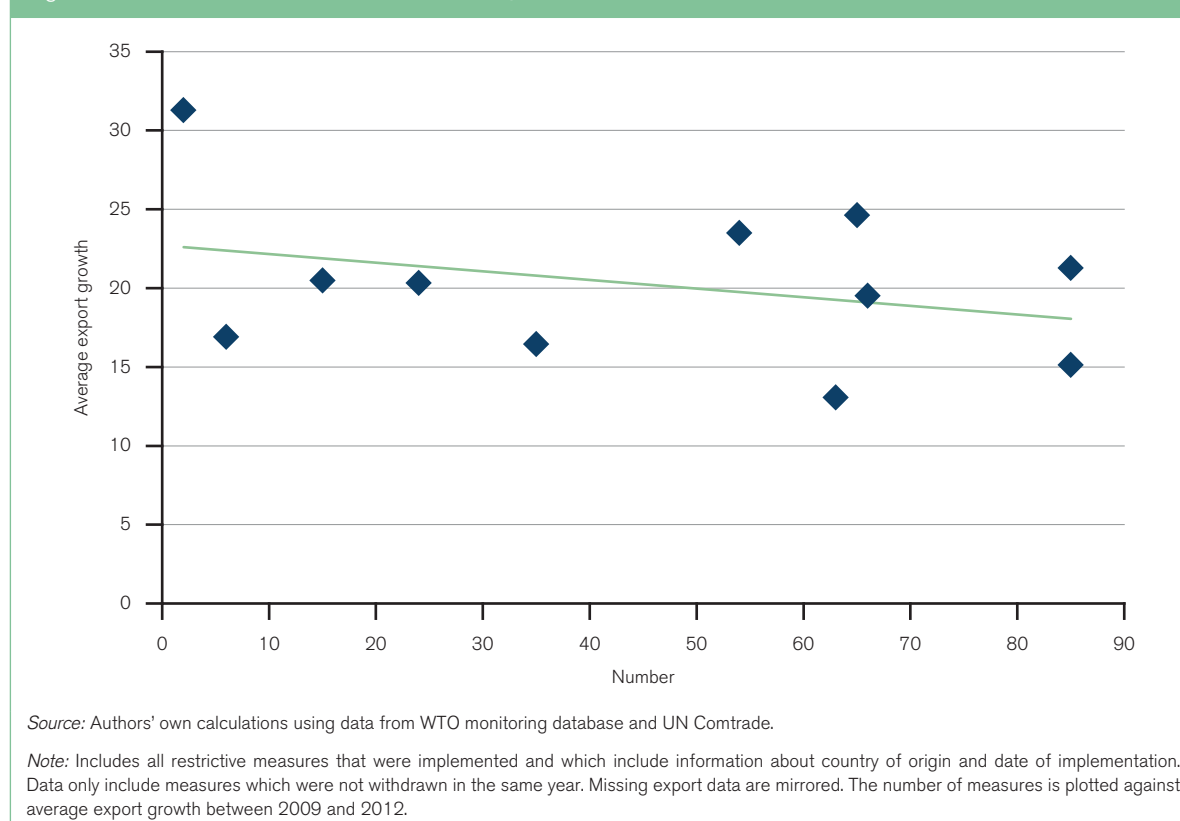


Source: Authors' calculations using data from IMF World Economic Outlook.

Perhaps the most striking aspect of this figure is the growth of imbalances between the mid-1990s and 2006. Imbalances narrowed in 2009 during the financial crisis and global recession, and have only partly grown since then. An explanation for the rise of surpluses is the “savings glut” in developing East Asia, which can be explained by its demographic structure (Wei and Zhang, 2011), a still fledgling social welfare system (Blanchard and Giavazzi, 2006; Chamon and Prasad, 2010), the lack of financial and capital market development (Forbes, 2010), and the build-up of foreign exchange reserves to guard against a repeat of the Asian financial crisis of the 1990s (Gruber and Kamin, 2007). Deficits in developed countries, specifically in the United States, have arisen because of the low personal savings rate and federal government deficits (Chinn and Ito, 2008). The United States has also proven to be a magnet for global savings because of its attractiveness as an investment destination, the depth and sophistication of its financial markets and the role of the dollar as a leading international reserve currency (Bernanke, 2005).

Blanchard and Milesi-Ferretti (2009) have argued that large imbalances create systemic risks because the eventual adjustment tends to be disorderly and may create global macroeconomic and financial instability. This has led some to claim that while these imbalances may not be the ultimate cause of the global crisis, they reflected and magnified the ultimate causal factors behind it (Krugman and Obstfeld, 2009). There is, therefore, a good basis for reducing them. Marchetti et al. (2012) have made two suggestions in this regard. First, market-opening efforts in services in the WTO, including in the area of financial and health services, can reduce policy-related distortions and market imperfections in surplus-developing countries that have led to the build-up of unsustainable imbalances. Multilateral services liberalization can also contribute to economic diversification in oil-exporting economies and to a more domestic, demand-driven growth in other surplus countries, such as China. Secondly, since the first-best solution to large and persistent global imbalances is international cooperation in macroeconomic, exchange rate and structural policies, the reduction of global imbalances should continue to remain high on the international agenda.

Figure E.12: Number of trade-restrictive policy measures and export performance, 2009–12



in Figure E.12. Judging by the negative slope of the line plotting export performance against the number of trade-restrictive measures applied by a country, there is no evidence that G-20 developing countries which took a more restrictive stance performed better than countries which took less restrictive measures.

4. Conclusions

Trade openness in itself has ambiguous effects on the macroeconomic volatility of developing countries. Nevertheless, in the 2008–09 crisis, trade proved to be a transmission mechanism of economic shocks originating in developed markets to producers and traders in developing economies. The dramatic reduction in international trade in the wake of the crisis would have been a lot worse if trade protectionism of the scale experienced in the Great Depression had been seen. For developing countries, this could have erased a big part of the development gains from the last decade.

On the whole, there was no large-scale outbreak of trade protectionism during the crisis, particularly in comparison with the experience during the Great Depression. With respect to developing countries,

four reasons may explain why these countries did not systematically raise trade barriers during the crisis. If governments are risk averse, they have more to gain by sticking to a trade agreement, i.e. abiding by their WTO commitments, when the economic environment becomes more volatile. Empirical evidence suggests that being a member of the WTO acted as a restraint to the use of trade-restrictive actions during the crisis.

Secondly, other policy instruments better suited to managing falling demand and macroeconomic volatility were available to developing countries. There was a coordinated response by the G-20 countries on macroeconomic policy and on trade with their commitment to refrain from erecting new trade barriers. Thirdly, the spread of global value chains increased linkages among countries, creating a common interest in preventing the spread of protectionism. Finally, raising trade barriers would have proven to be ineffective in promoting economic recovery in the medium to longer term.

Despite the positive role of the WTO and its trade monitoring exercise in keeping traditional instruments of protectionism at bay, the possibility of using other measures unconstrained by WTO rules – or policy substitution – suggests that the world should remain vigilant.

Endnotes

- 1 This trend rate of growth is not deterministic and can vary over time ("stochastic"). Various ways of decomposing the trend and cyclical components of GDP have been developed in the macroeconomic literature (Hodrick and Prescott, 1980; Baxter and King, 1999; Christiano and Fitzgerald, 2003).
- 2 Financial openness is of course the other channel through which international shocks can be propagated to other economies. However, financial markets also offer the possibility to absorb shocks via diversification and inter-temporal substitution. It is, therefore, interesting which effect dominates. The full effect of financial development and integration is most likely to be positive for countries above a certain development threshold (Ayhan Kose et al., 2011). Therefore, there is a large body of literature which recommends the need to strengthen domestic financial markets before opening them up (Rodrik and Subramanian, 2009).
- 3 The "bullwhip effect" is also sometimes referred to as the "whiplash" or "whipsaw" effect.
- 4 For example, the 2009 survey by the Bankers' Association on Trade and Finance (BAFT), covering the period from the third quarter of 2008 to the first quarter of 2009, indicates that the flows of secured and unsecured trade finance to developing countries had fallen more than the flows of trade in 2008, calculated on a year-on-year basis.
- 5 A self-enforcing trade agreement is one where the short-term gains of a country violating its trade commitment is outweighed by the long-term cost of foregoing all future benefits of cooperation from its trade partner(s).
- 6 This differs from the result of their analysis of the experience of five industrialized countries/customs territories: Australia, Canada, European Union, Japan, Republic of Korea and the United States (Bown and Crowley, 2013b). They establish a counter-cyclical pattern in these countries' use of trade contingent measures and this behaviour remained the same during the Great Recession (2008-09). Despite this, there were also only a small number of restrictive actions taken by the developed countries and they attribute this to the simultaneous weakening of growth in their trade partners.
- 7 The seven G-20 developing countries are Argentina, Brazil, China, India, Mexico, Turkey and South Africa.
- 8 See the discussion by Evenett (2009).
- 9 Declaration of the Summit on Financial Markets and the World Economy, Washington D.C., 15 November 2008.
- 10 The role of the WTO is reflected in the relationship between bound tariffs (one of the explanatory variables) and applied tariffs (dependent variable), which were generally positive but small in magnitude. When the bound tariffs were interacted with an economic crisis dummy variable, the resulting coefficients were actually negative for some countries, suggesting that WTO membership led them to liberalize rather than to increase applied tariffs.
- 11 The current account measures a country's net exports of goods and services plus net factor payments and transfers from abroad.
- 12 In principle, surpluses and deficits should add up to zero since every country's export is another country's import. However, exports and imports tend to diverge somewhat in practice due to differences in data recording across countries. Despite minor discrepancies, the bars in this chart remain roughly symmetrical around zero, which demonstrates that large surpluses in some countries are matched by large deficits in others.

F. The WTO and developing countries

This section discusses a number of the WTO's features which help underpin development and explain their economic rationale. It is divided into four subsections. The first one illustrates how the WTO has been useful in helping developing countries take advantage of and manage the challenges arising from the four trends portrayed in the previous sections. The second subsection discusses, from an economic perspective, the role that commitments and flexibilities in trade agreements play for development. Economic literature supports the view that WTO rules and disciplines promote growth by providing the predictable environment that businesses require to flourish. At the same time, it justifies the existence of WTO flexibilities, including through special and differential (S&D) treatment, on the basis of market failures and the different ability of WTO members to implement obligations. The third subsection describes the specific rules and disciplines that specifically apply to developing countries. The final subsection illustrates the institutional features particularly relevant for developing country members.

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Some key facts and findings

- Commitments are a key feature of international trade agreements. One study has found that countries undertaking substantial reforms in the context of acceding to the WTO have grown about 2.5 per cent faster for several years after their accession. At the same time, rule-based flexibilities are important to address certain market failures.
- In the WTO system, developing countries can benefit from special and differential (S&D) treatment through the principle of providing less-than-full reciprocity for trade concessions and through other flexibilities.
- At the Bali Ministerial Conference in December 2013, WTO members reinforced the development dimension of the WTO. The steps taken included the Agreement on Trade Facilitation, which links the obligations of developing countries to their implementation capacity and allows them to determine their own technical assistance needs and implementation schedule. When implemented, it should provide momentum to further reduce trade costs globally. In addition, a monitoring mechanism on S&D treatment was adopted. This will allow developing countries to raise the challenges they face in utilizing existing S&D provisions so that members can find solutions.
- The Committee on Trade and Development is the focal point on development issues in the WTO. It considers concerns raised by developing countries, promotes transparency in preferential tariff treatment and in regional trade agreements and oversees the implementation of WTO trade-related technical assistance.

1. The four trends and the WTO

Development objectives are at the core of the WTO. Members recognize that trade and economic relations should be conducted with a view to improving economic development, including raising standards of living, ensuring full employment, increasing real income and effective demand, and expanding production and trade in goods and services. Furthermore, members recognize the importance of ensuring that developing countries and least-developed countries (LDCs) share in the growth of international trade and that the more developed WTO members are expected to increase trade opportunities for the less developed members.¹

The WTO has underpinned the economic progress of developing countries by allowing them to take advantage of, adapt to and mitigate risks arising from the four trends identified in this report.

First, the strong economic performance of many developing countries has been strongly correlated with reductions in their levels of protection, a significant part undertaken in the context of implementing WTO commitments. As shown in Section B, G-20 developing countries, for example, have reduced their MFN applied rate by over one-third from 15.6 per cent in 1996 to 10.1 per cent in 2009-11. They have bound over 80 per cent of their tariff lines and reduced their bound rates by a quarter, from 39 per cent in 1996 to 29.2 per cent in 2009-11. China's accession to the WTO played a major role in its opening to trade and a large body of research shows that WTO accession has had a positive impact on China's economic growth, trade and on investment.

The opening of G-20 developing economies has expanded export opportunities for developing economies in general and least-developed countries in particular. Preferential access also played a role in buoying the economic performance of the poorest countries. More than 80 per cent of LDC exports enjoy duty-free and quota-free (DFQF) access in developed markets. This share has been increasing with time and the importance of DFQF access was given a significant boost in Bali (see Section F.2(e)).

As regards the expansion of global value chains (GVCs), Section C highlights that integration of developing countries into GVCs has been made possible by the creation of a predictable business environment and the reduction of trade barriers and of trade costs. The importance of rules for a predictable environment and for the development of supply chains is revealed by the proliferation of preferential agreements that increasingly cover provisions that go deeper than WTO commitments. But, to the extent that supply chains are increasingly global in nature WTO commitments remain most relevant. WTO commitments provide a level playing field that is key not only with respect to trade in intermediate goods, which

are largely most-favoured nation (MFN) duty free, but also for trade in services – a critical sector for the development of GVCs.

Significant obstacles to GVC participation remain especially for the least-developed economies. Recent surveys have highlighted quality of infrastructure, procedures at the border and red tape among the most important barriers. The new Trade Facilitation Agreement signed at the Ninth WTO Ministerial Conference in December 2013, when implemented, would provide further momentum for reducing trade costs globally (see Box C.12). It should help reduce trading times and improve the predictability of trade and thereby boost trade, in particular within value chains. In the short run, the challenge will be to ensure a speedy and effective implementation of the Agreement. This will involve securing enough assistance and support to help developing and least-developed country members implement the provisions of this agreement, in accordance with their nature and scope. This highlights the vital role that technical assistance can play, by directing Aid for Trade resources to assist implementation of trade facilitation, in expanding the participation of developing countries in value chains.

High and rising commodity prices over the last decade have created opportunities for developing countries to leverage agricultural and natural resource exports for development (see Section D). Trade and existing trade rules (including on subsidies and quotas) have allowed many developing country exporters of these products to seize this opportunity. On the other hand, high agricultural commodity prices have posed a challenge for others, particularly net food importers. Here, flexibilities like those provided by the Bali Decision on Public Stockholding for Food Security Purposes help mitigate the problem. Further progress on the Doha Development Agenda could help realize the full potential of the agriculture sector to contribute to development.

Finally, the WTO has helped safeguard the economic gains achieved by many developing countries in the past decade despite the world suffering from the biggest economic crisis of the past 70 years. Economists generally believe that levels of protectionism should move in a countercyclical fashion to economic activity. There is some empirical support for the countercyclical behaviour of protectionism, particularly in the case of trade remedies, such as anti-dumping actions. Yet, the economic crisis of 2008-09 did not trigger a protectionist surge bearing resemblance to the experience during the Great Depression of the 1930s or even to predictions based on countries' reactions to previous business cycles. As discussed in Section E, the WTO helped contain protectionism through its system of trade rules and the effectiveness of its monitoring efforts. One explanation why protectionism did not materialize is that countries have an aversion to risk or uncertainty. Thus, governments have more to gain by sticking to a trade agreement when the economic environment becomes more volatile. Another explanation is that the careful

monitoring of trade-restrictive measures, including through the WTO, was effective.

2. The economic role of commitments and flexibilities in trade agreements

Trade agreements strike a balance between predictability achieved through a set of enforceable obligations and flexibility provided by possible deviations from commitments under certain conditions. A totally rigid or completely non-binding agreement is unlikely to attract much participation in the agreement. This section first looks into why countries make binding commitments to each other in international trade agreements and the benefits of those commitments. It then analyses why developing countries may require special flexibilities as long as certain circumstances persist that are more common in these countries.

(a) The value of commitments

The very existence of an international trade agreement and adherence by all members to its rules are of key importance for economic well-being and development. Such reliable commitments are important to realize the development potential inherent in the four trends. The 2007 *World Trade Report* provided an extensive discussion of the reasons why countries negotiate international trade agreements (WTO, 2007).

One of the principal approaches (Bagwell and Staiger, 1999; 2003) is that without an international trade agreement countries would be tempted to manipulate their terms of trade (price of a country's exports relative to its imports) in order to derive economic benefits to the detriment of their trading partners. As other countries would respond in kind, global trade volumes would be inefficiently low; only when countries agree to abstain from unilateral trade policy setting will they all be better off.²

Gros (1987) emphasizes that in a world characterized by increased product differentiation, developing countries wield market power over certain products and should therefore participate in trade policy cooperation. It is precisely the reciprocal exchange of market access commitments that makes cooperation happen and ensures that every country wins. Several authors have shown that not only reciprocal trade opening but also its application in a non-discriminatory fashion (i.e. MFN treatment) are crucial to prevent a later erosion of negotiated benefits (by offering better market access to other countries).³ Knowing the risk of being played off against each other in trade negotiations of this kind, countries would be reluctant to come forward with far-reaching trade-opening offers in the first place and the deals struck would be far from optimal (Bagwell and Staiger, 2004). According to this theory, reciprocity and MFN treatment are crucial for the conclusion and proper functioning of a trade agreement and the value it has to its members.

The second principal rationale for countries to join trade agreements is what is often referred to as the "commitment" approach. Under this approach, a government takes on trade-opening obligations under an international trade agreement not to solve a "beggar-thy-neighbour" type problem but to address a domestic political impasse.

Governments may not be able to credibly announce a policy of trade opening if industry lobbies consider that the government will not act on its pre-announced trade-opening policy in cases where the industry highlights an inability to compete and the threat of massive job layoffs. Knowing their power to forestall any future move to open up to trade, these industries do not have the incentive to invest in productivity improvements and adjust to future competition. If there is an international trade agreement, the government can make a credible announcement to open up to trade, signalling to domestic lobbies that it cannot afford to back down from its commitments without facing the costs of retaliation from its trading partners (Maggi and Rodriguez-Clare, 1998). The commitment function of an international trade agreement is often referred to as an "external anchor" or "signalling device", locking in and making irreversible a process of reform.⁴

Through different empirical strategies, Broda et al. (2008) and Bagwell and Staiger (2006) have been able to show that countries are tempted to manipulate their terms of trade and joined the General Agreement on Tariffs and Trade (GATT)/WTO in order to escape from mutually damaging beggar-thy-neighbour policies. Similarly, evidence exists to corroborate the relevance of the GATT/WTO as a commitment device (Staiger and Tabellini, 1999).⁵ Limão and Tovar (2011) show empirically that governments make tariff commitments in trade agreements in order to counter protectionist pressures from industry lobbies. In addition, the authors find that tariff reductions are greater when the government is in a comparatively weaker bargaining position regarding special interest groups. A range of papers have confirmed the commitment role played by the WTO, leading to reforms in areas such as services in transition economies (Eschenbach and Hoekman, 2006) and African countries (Djiofack-Zebaze and Keck, 2009). They have highlighted the importance of the depth/quality of commitments in this regard.

Estimates of the impact of being a GATT/WTO member on trade expansion and economic growth can be found in a number of studies. Subramanian and Wei (2007) estimate that GATT/WTO membership has resulted in a 120 per cent increase in world trade (refuting earlier, econometrically flawed studies which found that such impacts were negligible).⁶ The authors conclude that GATT/WTO membership has had a strongly positive but uneven effect on trade. They attribute this fact to the history and design of the multilateral trading system. For instance, the impact of the GATT/WTO was strong in sectors covered by its disciplines and not in sectors such

as agriculture and textiles and clothing, which for a long time were excluded or under a special regime.

Mansfield and Reinhardt (2008) find that GATT/WTO membership reduced export volatility by up to one-third, noting that the predictability of market access conditions implied in the GATT/WTO system of disciplines has a commercial value in itself. Tang and Wei (2009) show that commitments in GATT/WTO accessions are often associated with significant increases in growth and investment, but the effects work only for those countries that undertake substantial reforms. These countries grow about 2.5 per cent faster. While the pickup in the growth rate lasts for about five years after accession, the average economy is permanently larger by about 20 per cent as a result. The beneficial effects of GATT/WTO commitments are more pronounced among countries with comparatively weaker institutions, for instance in the rule of law. This suggests that binding and enforceable policy commitments under the WTO can contribute to good governance in promoting economic development.

While the value of commitments has been demonstrated both theoretically and empirically, it has also been acknowledged that trade agreements would not be concluded (or at least would not be as “deep” in terms of the level of obligations) if commitments could never be changed. An argument to justify rule-based flexibilities in trade agreements, such as trade remedies, is the presence of uncertainty over future developments at the time when a trade agreement is signed.⁷ These future developments may include economic shocks or changing political constraints. Such events may render the original bargain inefficient, at least temporarily, until a country has had time to adjust.

Short of re-negotiating the entire agreement, an “escape clause” may allow a country to readjust, even if this implies a failure to honour some of its commitments for a certain amount of time (Bagwell and Staiger, 2005; Bagwell, 2008). Sykes (2006) notes that such a temporary breach of obligations is efficient if the costs for the member affected by an unforeseen event exceed the benefits foregone by its trading partners. The *World Trade Report 2009* (WTO, 2009) has discussed in detail why, from an economic perspective, such “escapes” have to be time limited and subject to the presence of specific conditions to avoid moral hazard, i.e. an abuse that would destabilize the entire agreement.

Such escapes are typically available to any member of an agreement.⁸ However, throughout the history of the GATT and WTO, developing countries have argued in favour of special flexibilities that would only be available to them. The two theories regarding the existence of trade agreements discussed above do not provide major insights into why one group of countries should enjoy more favourable terms. In fact, Bagwell and Staiger’s (1999; 2003) “terms-of-trade” approach has reciprocity in the exchange of commitments as its central tenet.

The commitment approach (Maggi and Rodriguez-Clare, 1998) emphasizes the importance of enforceable obligations rather than flexibility to address a domestic credibility problem. However, additional flexibilities may be justifiable if market imperfections specific to or prominent in developing countries are considered.⁹ Different attributes have been highlighted in the literature (see below) that may distinguish developing countries from more advanced economies, notably small economic size, a “weak” government (i.e. prone to lobby influence), persistent and combined market failures, a higher degree of uncertainty over future developments (or higher sensitivity to uncertainty) or limitations in available economic resources (as well as various combinations of these characteristics). As long as these circumstances persist, they provide a rationale for special and differential treatment for developing countries. They are further discussed in what follows.

(b) Rationales for increased flexibility for developing countries

(i) *Small economic size*

The terms-of-trade theory regarding trade agreements only applies when countries can influence their terms of trade. Large countries would at best be indifferent towards extending concessions to small countries, which by definition cannot affect their terms of trade, without expecting any concessions in return. For the small countries, this MFN treatment would be important to avoid terms-of-trade losses and trade deviation (Bagwell and Staiger, 1999; 2003).

Another argument relates to the importance of economies of scale and the home market effect, including its magnification when trade costs are reduced.¹⁰ This leads to a concentration of manufacturing production in the “core”, while countries in the “periphery” are stuck with traditional sectors. While increasing labour and agglomeration costs in the core are expected to eventually redress this phenomenon to some extent, the argument has been made that these geographical constraints could be overcome by providing preferential access to larger export markets (or allowing for the formation of open trade areas among small developing countries). Given the limited domestic market size of many developing countries, this would help them to specialize in advanced sectors on a more equal footing (UNCTAD, 1999).

(ii) *Political economy and “weak” government*

As noted above, commitments in the context of international trade agreements can lend credibility to the announcement by “weak” governments to liberalize trade in the future and overcome demands for sustained protection from organized lobbies (Maggi and Rodriguez-Clare, 1998).

Conconi and Perroni (2004; 2012) modify the commitment approach to explain why a developed country would

accept longer transition times for a developing country trading partner to implement an agreement. In this model, the capacity in the developing country's import-competing sector depreciates slowly over time. The industry lobby opposes any swift exposure to foreign competition that would wipe out the revenue that can be earned during that time period. Hence, if the government feels compelled to accede to the lobby demands, market opening cannot take place in a single step. By letting its industry reap their returns during a transition period, the developing country caters to its special interest while at the same time credibly committing to welfare-improving market opening at a later stage. In the absence of flexibility afforded to it by its developed country partner, the developing country would have maintained high tariffs due to its domestic lobby problem. The developed country therefore accepts a lower return during the transition period to ensure a longer-term gain.

(iii) *Uncertainty*

A number of studies have examined the design of a trade agreement based on contract theory. Rosendorff and Milner (2001) and Bagwell and Staiger (2005) note that the efficiency of "escape clauses" increases with the level of uncertainty. If developing countries are assumed to face systematically higher uncertainty over the future, a generally higher level of flexibility may be appropriate.

Horn et al. (2010) further elaborate on the type of flexibilities to be afforded and the conditions that should be fulfilled. The authors hold that rigid disciplines should apply in regard to border measures, such as tariffs, while more discretion over domestic policy instruments, such as subsidies, can be afforded to countries that have fewer (or less effective) domestic policy instruments at their disposal and that have less power to manipulate their terms of trade. These conditions are more likely to apply to smaller countries at earlier stages of development than to larger, more advanced countries.

Limão and Maggi (2013) emphasize the role of uncertainty in a different manner than the contract theory literature. Starting from the terms-of-trade motive and the existence of external shocks that may lead to policy changes, they highlight a trade agreement's objective to reduce policy uncertainty in addition to constraining the level of trade barriers.¹¹ Among other factors, the authors show that the degree of openness (defined as the export share of GDP) as well as the flexibility (or adaptability) of the domestic economy matters. For more open economies (with small economies being naturally more open) and those with a lower degree of diversification and export supply elasticities, i.e. features that tend to prevail in lower-income countries, a decrease in policy uncertainty by its trading partners becomes relatively more important. The flip-side of this finding is that larger, more advanced economies depend comparatively less on this uncertainty-reducing motive and, hence, may be in a position to afford

more policy space to developing country partners than what is available to them.

(iv) *Various market failures*

A general argument for greater flexibilities can be made if developing countries are affected by market failures that do not (or only to a much lesser extent) occur in more advanced economies. The infant industry argument is the classic example of a combination of market imperfections that is more likely to be present in the developing world. While any country may target a potential comparative advantage in a sector characterized by dynamic economies of scale, there is no need for government intervention in the presence of well-functioning financial markets. In many developing countries, however, financial markets may be deficient and governments may not be in a position to address these problems directly, at least in the short term.

Another market failure of particular importance to less diversified economies relates to the discovery of new activities that a country may be comparatively good at undertaking (Hausmann and Rodrik, 2003). Pioneers bear the initial costs of developing new business models, which other producers will have little problem to imitate in case of success. Entry into new activities will therefore be under-supplied and governments would need to subsidize pioneer entrepreneurs. The argument of knowledge spillovers to competitors has also been made in relation to the (costly) exploration of new export destinations, which can justify support for new exporters (Greenaway and Kneller, 2007).

(v) *Resource constraints*

Trade opening is inevitably associated with structural change. However, the reallocation of resources towards expanding export activities and the restructuring of sectors affected by import competition are often associated with considerable frictions, for instance in labour markets. In advanced economies, companies and individuals may have the necessary resources to self-finance the adjustment process or benefit from government assistance (Falvey et al., 2010; Anderssen et al., 2005). In developing countries, workers/companies may not have sufficient savings to make the transition from one activity to another and cash-stripped governments may be ill-equipped to provide financial relief (Matusz and Tarr, 1999).

Under certain conditions, restructuring may be made easier through temporary increases in protection that slow down the adjustment process (and provide relief, for instance, to labour market congestion). In other situations, longer time periods may suffice to allow for a gradual exposure to foreign competition and to facilitate the auto-financing of the costs of adjustments by affected individuals and firms or a re-organization of government income.

Policies to assist in structural change may also include public investment in infrastructure to overcome constraints

faced by potential exporters (Limão and Venables, 2001). Resource-constrained governments may depend on official development assistance (ODA) in this regard. In the same vein, the implementation of trade obligations, even if ultimately beneficial, may be associated with upfront administrative and infrastructure costs that developing countries may find difficult to finance in the short term (Finger and Schuler, 1995; Maskus, 2000). Technical and financial assistance as well as longer time periods allowing for gradual implementation may be needed to make the transition.

In conclusion, special flexibilities for developing countries can be justified for a variety of reasons. On this ground, the need for flexibilities can generally be accommodated without undermining the fundamental purpose of an international trade agreement.

3. Special flexibilities and provisions for developing countries in the WTO

The WTO allows for various types of flexibilities for developing countries, summarized in this section. These flexibilities often aim to make it feasible for developing countries to undertake binding commitments beneficial to their economic development. First, several WTO provisions are of special interest to developing countries; in particular, some provisions aim at addressing their resource constraints through longer transition periods and technical assistance. Furthermore, special flexibilities are granted to developing countries to restrict imports and promote exports, and to leverage the development potential of the agricultural sector. Finally, S&D treatment with regard to market access in developed partner countries can also provide development benefits.

(a) Provisions of special interest to developing countries

The WTO agreements contain provisions that, while applying to all members, are of particular relevance in addressing development concerns. Some rules safeguard the interests of less developed members by placing them on the same footing as more developed members. For instance, all WTO members, regardless of their size or level of participation in global trade and economic flows, can in principle participate equally in WTO decision-making. This is in contrast to other international organizations with voting mechanisms that give less weight to developing countries.

WTO rules reduce or eliminate trade barriers and so help the exports of developing countries. Export subsidy disciplines prohibit or constrain countries from using subsidies that lower world prices. These disciplines are enforceable and have been used by developing countries to secure significant WTO rulings on subsidies provided to commodities such as sugar and cotton.

Certain exceptions from WTO disciplines available to all members also give developing countries space to address their development aims. Articles XX(b) and XX(g) of the GATT provide exceptions that allow WTO members to take measures aimed at promoting sustainable development. This includes situations where the measures are necessary to protect human, animal or plant life or health, or relate to the conservation of exhaustible natural resources. The WTO Agreement on Sanitary and Phytosanitary Measures (SPS) and the Technical Barriers to Trade (TBT) Agreement provide more detail on the exceptions available to WTO members to enact measures that achieve an appropriate level of sanitary or phytosanitary protection or that fulfil a legitimate objective (including the protection of human health or safety, animal plant life or health, or the environment).

In addition, there are some mechanisms that may under certain conditions be particularly useful in addressing the interests of developing countries. For example, Article XI:2(a) of the GATT allows members to maintain temporary export restrictions to prevent or relieve critical shortages of essential foodstuffs or other products. Such a provision may be useful to developing countries in addressing food security (see also Box F.1).

(b) Provisions addressing resource constraints of developing countries

There are numerous provisions in the WTO agreements that seek to address the resource limitations of developing countries in undertaking certain commitments. These provisions can be broadly grouped into two categories: transitional time periods and technical assistance.

(i) *Transition periods*

The WTO agreements contain various provisions establishing grace periods or extended timeframes for developing countries to undertake specified obligations. Many of these periods have elapsed. There remain, however, critical instances in which deadlines have been extended either through the agreement of WTO members at Ministerial Conferences or in relevant committees. As discussed above, for instance, provisions of the WTO Agreement on Subsidies and Countervailing Measures (SCM) have extended the time periods during which developing countries meeting certain criteria relating to their level of GNP and export competitiveness have been allowed to use export subsidies. Similarly, although LDCs were originally given a transition period of 10 years to undertake disciplines under the Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement, that period has been extended twice. Following a decision of the TRIPS Council on 11 June 2013, the transition period has now been extended until 1 July 2021.

Box F.1: Bali Ministerial Conference: Decision on Public Stockholding for Food Security Purposes

Existing WTO rules include public stockholding programmes for food security purposes in the “Green Box” category of domestic support. This permits governments to incur expenditures, without any monetary ceiling, in relation to the accumulation and holding of stocks for food security purposes subject to certain conditions that, among other things, require the acquisition and release of stocks under market conditions. The rules also capture a situation in developing countries when food stockpiling for food security purposes is carried out at guaranteed prices where the concerned developing countries would need to account for the amount of price support in the calculation of subsidies (or aggregate measure of support) subject to annual limitation. Concerning the latter situation where a public stockholding programme intersects with price support policies, a group of developing countries made a proposal concerning the calculation of price support that results from the acquisition of stocks from farmers at administered prices.

As per the Decision¹² adopted at the Bali Ministerial Conference, developing countries were granted an interim protection against legal challenge with regard to existing public stockholding programmes for food security purposes in cases where operating such policies might conflict with their WTO-bound agricultural commitments. The developing countries in potential breach of their agricultural subsidy commitments may benefit from the decision subject to certain transparency, consultation and safeguard requirements. Simultaneously, a work programme on food security has been established, to be conducted over the next four years for a fuller discussion on this topic with a view to finding a lasting solution.

Some of the WTO commitments undertaken by developing countries still allow them to seek exemptions from obligations for specified periods. For instance, Article 10.3 of the SPS Agreement and Article 12.8 of the TBT Agreement authorize the respective committees to grant developing countries exceptions for a specific period of time from obligations, in whole or in part, under the agreements. Similarly, Annex F to the Hong Kong Ministerial Declaration permits least-developed countries in the WTO to maintain measures inconsistent with the Trade-Related Investment Measures (TRIMs) Agreement for time periods subject to review and decision by the Council for Trade and Goods but with an end date no later than 2020.

(ii) Provisions on technical assistance

The WTO addresses the resource limitations of developing countries through various requirements on technical assistance. Section F.4(b) and the Annex to this section outline aspects of the WTO’s technical assistance programmes that aim to address many of the capacity challenges facing developing countries in the WTO. In addition, various provisions in the WTO agreements and subsequent decisions at WTO Ministerial Conferences specifically require developed countries in the WTO to provide technical assistance to developing countries.

A number of provisions on S&D treatment are also contained in the Understanding on Rules and Procedures Governing the Settlement of Disputes (the Dispute Settlement Understanding or DSU). Most of these provisions require special consideration of developing country or LDC concerns, or allow for flexibility in dispute settlement procedures to take account of resource constraints in these countries. There are also provisions

that address development concerns about implementation of dispute settlement rulings. Arbitrators have taken these provisions into account in granting developing countries in the WTO a longer period of time for the implementation of the recommendations and rulings of the Dispute Settlement Body (DSB) in a particular dispute. In addition, the WTO Secretariat is required by the DSU to make available a legal expert to assist developing countries in dispute settlement procedures.

The Agreement on Trade Facilitation embodies a new approach to the provision of technical assistance (see also Box C.12 in Section C). Section II of the Agreement establishes a link between the obligations of developing countries on the one hand and their implementation capacity on the other hand. In addition, developing countries are allowed to determine their own technical assistance needs and implementation schedule.

*(c) Special flexibilities to restrict imports and promote exports**(i) Exemptions for developing countries*

The only provision explicitly providing special flexibility to developing countries in the original version of the GATT was Article XVIII. This provision allowed a contracting party to use measures not ordinarily permitted under the GATT, such as quantitative restrictions, “in the interest of its programme of economic development and reconstruction”, but only after notifying the contracting parties, negotiating with other contracting parties that might be “substantially affected” by the proposed measures,¹³ and obtaining the approval of the contracting parties.¹⁴ Apart from this

“infant-industry” exception, developing countries could also take advantage of the flexibilities offered by Article XII, which had been included in the GATT at the behest of developed countries that expected to encounter balance-of-payments problems in the post-war reconstruction period.

In the first decade after the adoption of the GATT, both developed and developing countries made frequent use of the right to impose quantitative restrictions to safeguard their balance of payments.¹⁵ By contrast, the infant-industry exception, which had more onerous requirements, was hardly invoked.¹⁶ Since developing countries often found themselves in balance-of-payments difficulties, they could apply quantitative restrictions under the balance-of-payments exception instead of using the infant-industry exception.¹⁷ The opportunity for developing countries to use balance-of-payments restrictions was somewhat broadened when a separate exception to apply restrictions for this purpose, available only to developing countries, was added to the GATT as Article XVIII:B at the 1955 review session.

Throughout the history of the GATT and in the first decade after the establishment of the WTO, developing countries made extensive use of their right to impose quantitative restrictions for balance-of-payments purposes. From 1960 to 2005, developing countries submitted to a total of 220 reviews of their balance-of-payments restrictions, an average of slightly more than five per year.¹⁸ Since 1995, however, the Understanding on the Balance-of-Payments Provisions of the General Agreement on Tariffs and Trade 1994, which forms an integral part of the GATT 1994, has tightened the rules for the use of quantitative restrictions for balance-of-payments purposes. The increasing pushback against the use of quantitative restrictions to protect a member’s balance of payments has also given rise to dispute settlement proceedings at the WTO. This may be one of the reasons why only three developing countries have employed measures to protect their balance of payments since 2005.¹⁹ The infant industry exception was also revised in 1955, as set out in GATT Article XVIII:C. This article was invoked 14 times prior to the creation of the WTO.²⁰ Since 1995, it has been invoked on three occasions.²¹

Other flexibilities include some that distinguish between WTO members on a basis other than a member’s status as a developing or least-developed country. Article 27.2(a) of the SCM Agreement exempts two categories of countries from export subsidy disciplines: (i) LDCs; and (ii) other developing countries listed in Annex VII(b) so long as their gross national product (GNP) per capita does not exceed US\$ 1,000 per year. All other developing countries were given eight years to eliminate existing export subsidies in accordance with Article 27.2(b), subject to the possibility of an extension under Article 27.4.

In the Doha Ministerial Decision on Implementation-Related Issues and Concerns, ministers directed the SCM Committee to extend the transition period for certain export subsidies of developing countries in the WTO. Such extensions were authorized up to the end of 2013, meaning that they must be phased out by the end of 2015 in accordance with Article 27.4. The SCM Agreement also provides in Article 27.5 and 27.6 that any export subsidy exemption must no longer apply for products that reach export competitiveness – that is, where exports of a product by a developing country in the WTO have reached a share of at least 3.25 per cent of world trade in that product over a two-year period. Article 27.5 clarifies that all developing countries must phase out such subsidies over a two-year period but that those countries identified in Annex VII would have a transition period of eight years from when export competitiveness exists.

In the area of agriculture, the right to use export subsidies by countries has been limited to products where the subsidies were granted by countries during the Uruguay Round base period (1986-90) subject to the reduction commitments in their schedule of commitments. Developing countries were additionally offered a flexibility to grant export subsidies during the implementation period to reduce the cost of marketing and transport in accordance with Article 9.4 of the Agreement on Agriculture.²² In addition, the issue of development of internationally-agreed disciplines on export credits and similar measures has been dealt with in the agriculture negotiations in recognition that such measures could be used to circumvent export subsidy commitments. In line with the Marrakesh Ministerial Decision of 2001 concerning the net-food-importing developing countries, which looks at this issue from the perspective of “access to food” for these target countries, WTO members in the negotiations are mindful that “any agreement relating to agricultural export credits makes appropriate provision for differential treatment in favour of least-developed and net food-importing developing countries”.²³

Other flexibilities are significant in addressing the export interests of developing countries. Article 9.1 of the Agreement on Safeguards, for instance, provides for an exemption from safeguard actions for developing country products not exceeding 3 per cent of total imports of the product concerned so long as all such developing country products do not exceed 9 per cent of total imports. Article 27.10 of the SCM Agreement requires members to terminate a countervailing duty investigation of developing country imports if the challenged subsidies do not exceed 2 per cent of the value of the product in question. Termination is also mandated if the volume of the subsidized imports from a developing country in the WTO amounts to less than 4 per cent of the total imports of the product concerned so long as all such developing country imports do not exceed 9 per cent of total imports.

(ii) *Special flexibilities in preferential trade arrangements*

The WTO affords developing countries certain flexibilities in undertaking commitments under preferential trade arrangements that may depart from WTO non-discrimination rules. Paragraph 2(c) of the Enabling Clause permits a departure from MFN treatment for developing countries in the WTO by allowing them to enter into regional or global arrangements with other developing countries for the mutual reduction or elimination of tariffs and non-tariff measures for products imported between the parties to the agreement.

Article XXIV of the GATT also allows the formation of customs unions and free trade areas among all WTO members but the conditions appear more stringent than those set out in paragraph 2(c). According to Article XXIV, any such regional arrangements should cover substantially all the trade between the parties to the arrangement, and the duties and regulations of commerce applied to third parties should not be more restrictive than those existing prior to its formation. Thus, paragraph 2(c) appears to provide developing countries with more flexibility since there is no requirement to cover as many sectors as under Article XXIV. Such flexibility may also be relevant in respect of Article V of the General Agreement on Trade in Services (GATS). To date, 34 such arrangements have been notified by developing countries under this provision of the Enabling Clause.

(d) *Agricultural policy distortions and special flexibilities for developing countries*

The Agreement on Agriculture has established a multilateral framework on domestic agricultural policy. Detailed criteria have been prescribed for policy-makers regarding domestic measures that would be deemed as causing no or minimal distortion to trade and production. The government spending for such measures (often referred to as “Green Box” measures) is exempt from any monetary ceiling imposed by the WTO.

Policies to create rural infrastructure, to enhance investment in agricultural research and to provide training and extension services to farmers and expenditure on food stockholding programmes are all explicitly mentioned in the Green Box. Ministers in Bali adopted a decision²⁴ to expand the list of “general services” programmes exempt from a monetary ceiling and to include various policies that aim to improve rural livelihood security and to alleviate poverty.

Other government support measures that are deemed to cause trade distortion (i.e. the “Amber Box”) are subject to reduction commitments and an annual monetary limit. This limit applies only when the support amounts exceed a threshold (called *de minimis*). The threshold

for developing countries (10 per cent of the value of agricultural production) is twice as high as the threshold for developed countries (5 per cent). Trade-distorting support is mandated to be subject to substantial reduction in the Doha Round negotiations, where developing countries would enjoy special and differential treatment.

Developing countries have an additional flexibility whereby certain support measures designed to encourage agricultural and rural development have been specifically exempted from any annual monetary limitation. Article 6.2 of the Agreement on Agriculture states that these “development programmes” include investment subsidies generally available to agriculture, input subsidies to poor producers, and producer subsidies to encourage diversification from growing illicit narcotic crops.

(e) *Special and differential treatment with regard to market access*

(i) *Less-than-full reciprocity in tariff negotiations*

One of the principal ways in which developing countries have been accorded special and differential treatment in the GATT and the WTO is through less-than-full reciprocity in reduction commitments in the context of negotiations on market access, in particular in tariff negotiations. As early as the mid-1950s, the GATT parties recognized, in Article XXVIII *bis*, “the needs of less-developed countries for a more flexible use of tariff protection to assist their economic development and the special needs of these countries to maintain tariffs for revenue purposes”.²⁵ This recognition crystallized into the principle that the developed contracting parties “do not expect reciprocity for commitments made by them in trade negotiations to reduce or remove tariffs and other barriers to the trade of less developed contracting parties”.²⁶

The Ad Note to Article XXXVI.8 clarifies that the phrase “do not expect reciprocity” means that “the less-developed contracting parties should not be expected, in the course of trade negotiations, to make contributions which are inconsistent with their individual development, financial and trade needs, taking into consideration past trade developments”. This formulation was reproduced almost verbatim in the Ministerial Declarations launching subsequent negotiating rounds.²⁷ Most recently, the Doha Ministerial Declaration called, with respect to agriculture, for “special and differential treatment” to be “embodied in the Schedules of concessions and commitments”, and, with respect to non-agricultural market access, for “less than full reciprocity in reduction commitments”.²⁸

The practical impact of the principle of less-than-full reciprocity has varied depending on the modalities adopted in particular negotiating rounds. Early negotiation rounds were conducted on a bilateral request-and-offer basis.

In order to secure full reciprocity from other developed countries, developed countries adopted the practice of negotiating tariff reductions primarily with the principal supplier of a product. This meant that developing countries, which were rarely principal suppliers of the products concerned, often did not participate in the negotiations.²⁹ Most developing countries benefited only to the extent that products of interest to them happened to be the subject of bargaining among the developed countries.³⁰

The cumulative impact of the application of less-than-full reciprocity in tariff negotiations throughout the history of the multilateral trading system accounts for the fact that developing WTO members today have, on average, fewer and higher tariff bindings – or limits – on non-agricultural products and higher tariff bindings on agricultural products than developed WTO members. For example, there is a large difference between the bound and applied tariff levels of a number of developing countries. This is often referred to as “water” or “binding overhang”. They also have a number of completely unbound tariff lines on non-agricultural products.³¹ This may, however, not be the case in instances where developing countries have, in acceding to the WTO, undertaken more stringent market access commitments, including tariff bindings that are closer to their applied tariff levels.

While all WTO members enjoy guaranteed access to the markets of all other WTO members under the same conditions and thus formally have the same market access rights, the trade-weighted average level of tariffs faced by exports from many developing countries in developed country markets remains higher than the weighted average level of tariffs that developed country exports face in the markets of other developed countries. In other words, many developing countries have fewer market access commitments (in the form of fewer and higher tariff bindings), but some effectively also have fewer market access rights. As Table F.1 demonstrates, this is particularly true for LDCs: the trade-weighted average of bound duties faced by exports from LDCs in developed countries is more than twice the trade-weighted average of bound duties faced by exports from developed countries in other developed country markets.

This suggests that, while the principle of less-than-full reciprocity may have allowed developing countries to maintain higher market access barriers, it has been less effective in helping developing countries to obtain market access rights to developed country markets.

(ii) *Non-reciprocal preferential market access for developing and least-developed countries*

Most developing countries also enjoy access to developed country markets under non-binding, non-reciprocal preferential schemes. Preferences in favour of developing countries were first authorized by the GATT's contracting parties in 1971 through a waiver of the most-favoured nation (MFN) obligation in GATT Article I.³² In 1979, the waiver was extended indefinitely through the Enabling Clause, which is now part of the GATT 1994.

Non-reciprocal preferential market access differs fundamentally from market access granted in GATT/WTO tariff negotiations in at least two ways. First, preference schemes are usually not negotiated multilaterally, but are rather granted unilaterally by the developed country in question. In the Tokyo Round – the first round of multilateral trade negotiations following the 1971 MFN waiver decision – developing countries sought to negotiate bindings of preferential rates or preference margins in GATT schedules of commitments. Developed countries objected to these proposals on the basis that preferences were “unilateral and non-contractual”.³³ Secondly, although the WTO is authorized to consider whether a preference scheme meets the conditions of the Enabling Clause allowing for a departure from MFN treatment, it is only compliance with these conditions, not compliance with the terms of the preferential scheme itself, that can be reviewed in WTO dispute settlement.³⁴

In the Doha Round, WTO members have agreed to enhance market access for LDC products, which is largely being implemented through preferential arrangements. At the Hong Kong Ministerial Conference in 2005, a decision was taken by WTO members that developed countries in the WTO and developing

Table F.1: Average weighted bound duty by country group (using 2010 imports of bound products only) (per cent)

Importer	Exporter		
	Developed	Developing (excluding LDCs)	LDCs
Developed	3.6	3.4	7.7
Developing (excluding LDCs)	18.3	15.5	9.4
LDCs	29.0	32.2	29.3

Source: Authors' calculations based on the Integrated Data Base (IDB) and Consolidated Tariff Schedules (CTS) database; ad valorem equivalents from World Tariff Profiles.

Note: Weights used for the averages refer to import notifications for 2010 made by 95 (EU counts as 1) WTO members to the IDB.

country members declaring themselves in a position to do so would "provide duty-free and quota-free market access on a lasting basis, for all products originating from all LDCs by 2008 or no later than the start of the implementation period in a manner that ensures stability, security and predictability".³⁵

Taking into account that some members may face difficulties in providing full DFQF market access, the decision required that this should be provided for at least 97 per cent of products defined at the tariff line level.

Further, at the Ministerial Conference in Bali in December 2013, WTO members decided that developed countries in

the WTO that do not yet provide DFQF market access on at least 97 per cent of products originating in LDCs "shall seek to improve" their DFQF coverage prior to the next Ministerial Conference. Developing countries declaring themselves in a position to do so are also encouraged to grant or improve DFQF market access to LDC exports.³⁶ Box F.2 discusses the issue of preference erosion in relation to these developments.

Table F.2 shows that, to date, most developed countries have granted DFQF market access on 97 per cent or more of tariff lines, and that developing countries such as China and India are also granting increasingly preferential market access to LDCs.

Table F.2: Duty-free quota-free market access in Generalized System of Preferences (GSP) schemes of developed and selected developing economies in the WTO, 2011

	Duty-free coverage (and exclusions)	Number of tariff lines liable for duty* (national tariff lines)
Developed members		
Australia	100%	None
Canada	98.8% (dairy, eggs and poultry)	102
European Union	99% (arms and ammunitions)	92
Japan	98.2% (rice, sugar, fishery products, articles of leather)	164
New Zealand	100%	None
Norway	100%	None
Switzerland	100% (except two cheese items)	2
United States	82.5% (dairy products, sugar, cocoa, articles of leather, cotton, articles of apparel and clothing, other textiles and textile articles, footwear, watches, etc.)	1,832
Selected developing members		
China	60% of all tariff lines covered by DFQF market access, with the aim of increasing to 97% of its tariff lines by 2015	
India	85% of tariff lines covered by DFQF market access, and a margin of preference above MFN for an additional 9% of tariff lines	
Korea, Republic of	95% of tariff lines, as of January 2012	
Chinese Taipei	Nearly 32% of tariff lines (2011)	
Turkey	Nearly 80% of tariff lines (2011)	

Source: WTO Secretariat (WTO document WT/COMTD/LDC/W/58)

*The number of tariff lines may vary from one year to the next due to changes in national tariff nomenclature.

Box F.2: Preferential market access and preference erosion

The issue of preferential market access is particularly relevant for least-developed countries and was reaffirmed at the WTO's Ninth Ministerial Conference in Bali. LDCs have benefited from preferential market access to developed countries, promoted under the Enabling Clause and the Generalized System of Preferences (GSP) or resulting from bilateral or regional agreements.³⁷ In December 2005, the WTO's Sixth Ministerial Conference in Hong Kong adopted a decision to extend LDCs' duty-free quota-free (DFQF) market access granted by developed countries to at least 97 per cent of tariff lines. More recently, trade preferences among developing countries were promoted with the establishment of the Global System of Trade Preferences, under which a number of developing countries exchange trade concessions among themselves.

Box F.2: Preferential market access and preference erosion (continued)

More than 80 per cent of LDC exports enjoy DFQF access in developed markets and this share has been increasing with time (see Table F.3). However, other developing countries are also exporting almost 80 per cent under duty-free treatment, suggesting that LDCs do not enjoy preferential treatment compared to their competitors. This simple comparison does not tell the entire story, however, because most of the DFQF improvements recorded for other developing countries are due to the elimination of tariffs under MFN treatment. In 2011, out of the 80 per cent of duty-free exports from developing countries, only 20 per cent entered under preferential regimes. By contrast, 53 per cent of exports from LDCs receive DFQF market access for products that are dutiable under MFN treatment.

Table F.3: Proportion of developed-country imports from developing and least-developed countries admitted free of duty, by value, 2000-11

(per cent)

	2000	2005	2006	2007	2008	2009	2010	2011
Total duty-free access (excluding oil and arms)								
Developing countries ^a	64.8	74.9	76.2	77.4	78.7	77.0	78.8	79.7
Least-developed countries	69.8	80.4	79.1	79.8	80.6	80.4	80.4	83.4
Preferential duty-free access (on products dutiable under MFN treatment)^b								
Developing countries ^a	17.0	21.5	20.9	20.0	20.0	20.1	19.6	20.3
Least-developed countries	35.0	49.0	52.7	51.9	48.7	52.9	53.6	52.7

Sources: WTO-ITC-UNCTAD and based on the CAMAD database compiled by ITC, UNCTAD and WTO.

^a Including LDCs.

^b The preferential duty-free access portion is calculated by subtracting from the total duty-free access all products receiving duty-free treatment under the MFN regime. The indicators are based on the best available treatment, including regional and preferential agreements.

When looking at applied tariffs, including preferential treatment, LDCs have suffered from some erosion of preferential access in relation to other developing countries (see Table F.4). With the exception of agriculture, where the preference margin stands at about 6 percentage points, margins have been reduced to low or almost non-existent levels for textiles and clothing and other industries (between 1.7 and 0.6 percentage points). The main sectors where preference erosion occurs are textiles, fish and fish products, leather and leather products, electrical machinery, wood and wood products.

Table F.4: Average tariffs^a imposed by developed countries on key products from developing and least-developed countries, 2000-11

(percentage ad valorem)

	Developing countries^b							
	2000	2005	2006	2007	2008	2009	2010	2011
Agriculture	9.2	8.8	8.5	8.3	8	7.8	7.3	7.2
Clothing	10.8	8.4	8.3	8.3	8.2	8.1	8	7.9
Textile	6.6	5.3	5.2	5.2	5.1	5.1	5	4.9
Other industries	1.4	1.1	1.1	1	1	0.9	0.9	0.8
	Least-developed countries							
	2000	2005	2006	2007	2008	2009	2010	2011
Agriculture	3.6	3	2.7	1.9	1.6	1.2	1.0	1.0
Clothing	7.8	6.4	6.4	6.4	6.4	6.4	6.7	6.7
Textile	4.1	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Other industries	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2

Source: WTO-ITC-UNCTAD based on CAMAD compiled by ITC, UNCTAD and WTO.

Notes:

^a Average tariffs are based on best applicable tariffs (MFN and preferential treatments granted to LDCs and developing countries), and weighted using a standard export structure based on 2000-01 data, to limit the impact of the year-to-year changes in export composition and relative prices on the indicators.

^b Includes LDCs.

In 2011, 83 per cent of LDC exports (in value terms) entered developed markets duty free. This represents a slight improvement compared with an average of about 80 per cent between 2005 and 2010.

The importance of DFQF market access for LDCs is also reflected in the targets and indicators of the Millennium Development Goals that relate to trade (see Box F.3).

The benefits that developing countries can derive from non-reciprocal preferential treatment depend to a large extent on the rules of origin applied by WTO members to determine the country of origin of goods. Restrictive rules of origin that require a high percentage of value to be added to a product in a developing country in order for it to qualify as a product from the developing country, and thus be eligible for preferential treatment, can nullify the value of preferences. Accordingly, the Ministerial Decision on DFQF market access adopted in Hong Kong in 2005 stipulates that WTO members shall “[e]nsure that preferential rules of origin applicable to imports from LDCs are transparent and simple,

and contribute to facilitating market access”.³⁸ At the Ministerial Conference in Bali in December 2013, WTO members adopted multilateral guidelines for the development and improvement of rules of origin applicable to imports from LDCs.³⁹

At the 2011 Ministerial Conference, WTO members adopted a waiver allowing preferential treatment in favour of LDCs with respect to trade in services.⁴⁰ The waiver releases WTO members for 15 years from the obligation to provide MFN treatment under Article II of the General Agreement on Trade in Services (GATS) if they provide preferential treatment to services and service suppliers of LDCs without according the same treatment to “like” services and service suppliers of all other members. The waiver aims to facilitate greater participation of LDCs in trade in services. At the 2013 Ministerial Conference, WTO members noted that no member had made use of the waiver since its adoption in 2011 and decided to take steps to operationalize the waiver.⁴¹

As part of this process of operationalizing the waiver, a high-level meeting of the Council for Trade in Services

Box F.3: Updating the Global Partnership for Development

The Global Partnership for Development, referred to in Goal 8 of the United Nations’ Millennium Development Goals, includes market access and trade targets, as shown in Table F.5. These targets provide a means of measuring progress in the Doha Round. Indeed, to fully achieve Target 8.A would involve achieving a successful outcome to the Doha Round negotiations.

Table F.5: Global Partnership for Development targets and indicators

Target	Indicators
Target 8.A: Develop further an open, rules-based, predictable, non-discriminatory trading and financial system.*	Market access:
Target 8.B: Address the special needs of the least-developed countries. Includes tariff- and quota-free access for the least-developed countries’ exports.*	8.6 Proportion of total developed country imports (by value and excluding arms) from developing countries and least-developed countries admitted free of duty.
Target 8.C: Address the special needs of landlocked developing countries and small island developing states.*	8.7 Average tariffs imposed by developed countries on agricultural products and textiles and clothing from developing countries.
	8.8 Agricultural support estimate for OECD countries as a percentage of their gross domestic product.
	8.9 Proportion of ODA [official development assistance] provided to help build trade capacity.

Source: UN Department of Economic and Social Affairs website.
*Only trade-specific targets are cited here.

Target 8.B and related indicators are relevant for market access for LDCs. The UN targets have provided a focus for advocacy efforts. For example, in its report of March 2013 entitled “A Renewed Global Partnership for Development”, the UN Task Team on the Post 2015 UN Development Agenda argued: “Global efforts on fully implementing duty-free, quote-free market access for LDCs on a lasting basis need to continue together with creating simpler rules of origin requirements”.

A new generation of global targets (probably grouped as a set of “sustainable development goals”) is being crafted in the UN’s Post-2015 Development Agenda. The challenge is to establish a clear role for trade in this new agenda and reflect this role through a new set of specific indicators.

would take place six months after the LDCs have tabled their collective request identifying the sectors and modes of supply of export interest to them. At that meeting, WTO members would indicate the sectors and modes of supply where they intend to provide preferential treatment to LDC services and service suppliers. WTO members are also encouraged at any time to extend preferences to LDC services and service suppliers, consistent with the waiver decision. The decision also underlines the importance of enhanced technical assistance and capacity building to help LDCs benefit from the operationalization of the waiver.

4. Institutional aspects of trade and development in the WTO

The WTO responds to development issues mostly through the work of its committees, in particular the Committee on Trade and Development (CTD). With regards to trade capacity building, WTO partnerships are important. Finally, developing country members also derive particular benefit from the WTO's Trade Policy Reviews (TPRs).

(a) The Committee on Trade and Development (CTD)

The CTD is the mandated focal point for dealing with development issues within the WTO's institutional structure, although all WTO committees can potentially deal with the challenges developing countries face in implementing the specific agreements that each committee oversees. It was established in 1965, in response to pressure from less developed GATT contracting parties (now known as developing countries) to have the GATT deal more rigorously with development. Members are currently continuing to explore how to operationalize a 2011 ministerial instruction to further "strengthen" the CTD's mandate as a focal point for development work within the WTO.⁴²

This section can only provide a brief overview of the CTD's work; the annex to this section provides a more complete description.

The CTD provides a forum to raise development concerns and to discuss issues relating to specific groups of developing countries. For example, its work programme on small, vulnerable economies (SVEs) aims to facilitate the fuller integration of small economies into the multilateral trading system.

The CTD has a subsidiary body in the Sub-Committee on LDCs which oversees various initiatives related to LDCs. Among its manifold activities, it undertakes an annual review of market access provided to LDCs, which is an important way of encouraging WTO members to

improve access for LDCs. It also reviews regular reports on other capacity-building initiatives for LDCs, such as the Enhanced Integrated Framework (EIF), a multi-donor programme that helps LDCs play a more active role in the global trading system. The Sub-Committee also monitors LDC accessions, which members have agreed to facilitate and accelerate in the Doha Declaration. In 2012, it strengthened the accession guidelines for LDCs with the aim of streamlining the accession process for these countries.

The CTD also oversees implementation of the WTO's trade-related technical assistance and negotiates, when mandated to do so, the improvement of S&D treatment provisions. Developing countries have consistently raised concerns about their inability to utilize S&D provisions. A review of all S&D provisions with a view to strengthening them and making them more precise, effective and operational takes place in special sessions of the CTD. In this regard, at the Ninth Ministerial Conference in Bali, ministers adopted a Monitoring Mechanism on S&D. The aim of this mechanism is to provide a forum where WTO members can conduct regular reviews and analyses of the various flexibility provisions available to developing countries and LDCs in WTO agreements, ministerial decisions and General Council decisions. This will result in recommendations either to improve the implementation of a particular provision or to initiate negotiations aimed at improving the provision itself.⁴³

The CTD provides WTO members with the opportunity to better understand and keep track of developments in preferential trade arrangements (PTAs) and regional trade agreements (RTAs). It reviews members' notifications of preferential tariff treatment accorded by developed countries to products from developing countries, in accordance with the GSP and in line with the provisions of the Enabling Clause. Following the establishment of the Transparency Mechanism for PTAs in 2010,⁴⁴ the CTD also receives notifications of other non-reciprocal preferential schemes implemented by WTO members.⁴⁵

Finally, the CTD oversees implementation of the WTO's trade-related technical assistance initiatives, some of which will be discussed below.

(b) Partnerships in support of capacity building

Besides providing technical assistance directly to developing countries, the WTO works with partners on three key trade capacity-building initiatives: the Aid for Trade initiative, the Enhanced Integrated Framework (EIF) and the Standards and Trade Development Facility (STDF).⁴⁶ The three initiatives aim to help developing countries and LDCs maximise market access opportunities presented by trade opening.

The Aid for Trade initiative is supported by a broad range of intergovernmental organizations. The aim of the initiative is to help developing countries mainstream trade into their national development strategies and mobilize donor support for capacity-building and trade-related infrastructure. The initiative was launched at the WTO's Ministerial Conference in Hong Kong in 2005. Discussions on Aid for Trade take place regularly within the CTD. These meetings allow members to review and discuss the latest work on Aid for Trade. Since 2007, the WTO has also held Global Reviews of Aid for Trade every two years. The most recent review, focusing on global value chains, was held in July 2013. It provided participants with an opportunity to discuss the challenges faced by developing countries, and in particular LDCs, in integrating into value chains. Monitoring of Aid for Trade is conducted in close collaboration with the Organisation for Economic Co-operation and Development (OECD).

The Enhanced Integrated Framework (EIF) is a capacity-building initiative, which aims to resolve capacity-related challenges faced by LDCs in integrating into the multilateral trading system. The EIF has two funding windows, referred to as Tier 1 and Tier 2. Tier 1 focuses on institutional capacity building, such as the establishment of national implementation units and the undertaking of diagnostic trade integration studies (DTIS). These studies aim to understand the trade structure of a country, identify priority sectors and draw up an action matrix of priority reforms. Tier 2 consists of investment to fund some of the projects identified in the action matrix of the DTIS. Currently, all 48 LDCs in the WTO are part of the EIF, with countries at varying stages of implementation.⁴⁷

The Standards and Trade Development Facility (STDF) helps developing countries build their capacity to implement international sanitary and phytosanitary (SPS) standards,

guidelines and recommendations as a way of improving their ability to gain access to markets. Launched at the Doha Ministerial Conference in November 2001, the STDF is supported by the Food and Agriculture Organization (FAO), the World Organisation for Animal Health (OIE), the World Bank, the World Health Organization (WHO) and the WTO.⁴⁸ The work of the STDF includes exploring new technical and financial mechanisms for SPS coordination and resource mobilization and building alliances between standard-setting bodies and the implementing and financing agencies. At least 40 per cent of its project resources are devoted to LDCs and other low-income countries.⁴⁹ Its achievements include enhancing collaboration on SPS-related technical cooperation, improving the capacity of beneficiaries to identify and prioritize SPS needs and formulate project proposals that are able to secure funding, and improving the performance of the beneficiaries of STDF-funded projects.⁵⁰

(c) Trade Policy Reviews

The WTO's Trade Policy Review Mechanism (TPRM)⁵¹ aims at improving members' adherence to rules, disciplines and commitments in multilateral and plurilateral trade agreements. It offers members an opportunity to have an in-depth look at how WTO commitments are being implemented. The review process focuses on providing commentary and guidance, and not on determining whether a member has breached its obligations. This non-dispute settlement environment allows the members under review to be more open about their trade policies and practices. The feedback provided by members allows them to refocus, if necessary, their efforts to implement WTO commitments. For LDCs, Trade Policy Reviews provide an opportunity to identify their technical assistance priorities and signal them to other members and the WTO Secretariat.

Annex: The WTO Committee on Trade and Development

This annex provides a more complete description of the activities of the Committee on Trade and Development (CTD), the WTO's focal point for trade and development issues. The CTD has a series of functions, which will be discussed in turn after a brief historical background. It provides a forum to consider concerns raised by developing countries and to discuss issues of concern to specific groups of developing countries, spotlighting LDC issues and promoting transparency in preferential and regional trade agreements. The CTD also oversees implementation of the WTO's trade-related technical assistance and negotiates, when mandated to do so, the improvement of special and differential (S&D) treatment provisions.

(a) Historical background

The CTD was established in 1965 in response to pressure from less-developed GATT contracting parties (now known as developing countries) to have the GATT deal more rigorously with development. As early as 1947, they had already started championing the cause for establishing specific legal instruments to give them flexibility.⁵² As mentioned above, the addition of Part IV – a new chapter on “Trade and Development” – to the GATT signalled the importance its members attached to attaining the development goals of developing countries.⁵³ It was also through the provisions in Part IV mandating the setting-up of institutional arrangements that the CTD was born.

Following the establishment of the WTO, the General Council established the WTO Committee on Trade and Development in January 1995.⁵⁴

The CTD plays an important role for WTO members. All WTO committees can potentially deal with the challenges developing countries face in implementing the specific agreements that each committee oversees. However, the CTD is the mandated focal point for dealing with development issues within the WTO's institutional structure.

(b) A forum to consider concerns raised by developing countries

Any member can raise its development concerns in the CTD. Traditionally, it has been used by developing countries, which raise a wide range of concerns. For example, in 2002 a group of commodity export-dependent countries (Kenya, Tanzania and Uganda) initiated a discussion in the CTD on the challenges created by

long-term trends in the decline of primary commodities.⁵⁵ This discussion later fed into the agriculture negotiations in the Doha Development Agenda (DDA) and is one of the issues reflected in the 2008 draft modalities text.⁵⁶ The CTD provided the main platform for discussion, allowing the issue to gain the momentum that later justified its inclusion in the DDA negotiations.

Another example is the WTO Work Programme on Electronic Commerce, which also originated from a call by developing countries for the CTD to consider development aspects of e-commerce.⁵⁷ Since its establishment, this Work Programme has been the subject of considerable work and ministerial attention.⁵⁸ Currently, members are considering, among other things, how e-commerce can be used to enhance economic development in developing countries and LDCs. In particular, access to e-commerce by micro, small and medium-sized enterprises is being considered. At the WTO's Ninth Ministerial Conference in December 2013, ministers agreed to maintain the current practice of not imposing customs duties on electronic transmissions until 2015⁵⁹ – a decision seen as key in promoting trade through e-commerce.

A push by developing countries to “strengthen” the mandate of the CTD culminated in a 2011 ministerial instruction to operationalize its mandate as a focal point for development work within the WTO.⁶⁰ Members and negotiating groups such as the African Group continue to explore how this can be best achieved (see below).

At the Ninth Ministerial Conference, ministers adopted a Monitoring Mechanism on S&D. The aim of this mechanism is to provide a forum where WTO members can conduct regular reviews and analyses of the various flexibility provisions available to developing countries and LDCs in WTO agreements, ministerial decisions and General Council decisions. This will result in recommendations – submitted to the relevant WTO body – either to improve the implementation of a particular provision or to initiate negotiations aimed at improving the provision itself.⁶¹ The aim of the mechanism is to allow developing countries, which were its lead proponents, to use it to resolve some of the challenges they face in utilizing S&D provisions.

(c) Discussing concerns of specific groups of developing countries

Specific groups of developing countries use the CTD as a forum to discuss and gain traction on matters of particular

concern to them. For example, resulting from specific trade issues raised by SVEs, in 2001, ministers mandated a Work Programme on Small Economies. The objective of the Work Programme is to respond to the trade-related issues identified and facilitate the fuller integration of small economies into the multilateral trading system.⁶² The CTD oversees this work programme, which takes place within dedicated sessions on small economies. At the Ninth Ministerial Conference, ministers instructed the WTO Secretariat to provide, for discussion by members, relevant information and factual analysis on, among other things, the challenges and opportunities experienced by small economies when linking into global value chains in trade in goods and services.⁶³

The LDC Consultative Group is another group that uses the CTD to remind members of the need to prioritize their concerns. The group continually stresses the need to prioritize LDC interests in the form of special and differential (S&D) treatment – citing the integral and systemic importance these flexibilities have in supporting LDC efforts to pursue national development objectives and to integrate into the multilateral trading system.

The WTO African Group is an informal group of WTO members, through which African countries jointly advocate their negotiation positions and champion several of their interests through the CTD. For example, efforts to strengthen the mandate of the CTD have traditionally been led by the African Group (supported by other groups such as the SVEs).

Land-locked developing countries (LLDCs) also use the CTD as a forum for raising the profile of their issues. They regularly update members on LLDC initiatives, undertaken in other fora such as LLDC ministerial conferences,⁶⁴ that may have an impact on discussions at the WTO.

(d) Spotlighting LDC issues

The Sub-Committee on LDCs is a subsidiary body of the CTD. Its work programme (initiated in 2002 and revised in July 2013) looks at systemic issues of interest to LDCs in the multilateral trading system. For example, it mandates an annual review of market access provided to LDCs. Such reviews are an important way of encouraging WTO members to improve such initiatives for LDCs. To assist this review, the WTO Secretariat prepares an annual paper entitled “Market Access for Products and Services of Export Interest to Least-Developed Countries”.⁶⁵

The Sub-Committee also serves as a forum where members examine market access initiatives for LDCs under the Enabling Clause, a decision which enables developed members to give differential and more favourable treatment to developing countries. For instance, since 2001, it has considered notifications by

Australia, Canada, Japan and Switzerland relating to their Generalized System of Preferences (GSP) schemes for LDCs. Under these schemes, developed economies grant preferential tariffs to imports from developing economies. The Sub-Committee has also considered notifications by developing members such as China, India, the Republic of Korea and Chinese Taipei on their market access schemes for LDCs.

The Sub-Committee regularly discusses technical assistance provided by the WTO to LDCs and receives regular reports on other capacity-building initiatives for LDCs, such as the Enhanced Integrated Framework (EIF), a multi-donor programme that helps LDCs play a more active role in the global trading system. It also provides a forum for discussion of assistance given to LDCs by other agencies, thereby contributing to coordination among technical assistance providers.

The Sub-Committee periodically monitors implementation of the trade-related elements in the Istanbul Programme of Action for LDCs, a UN programme that charts out the international community’s strategy for the sustainable development of LDCs for 2011-20. Both the Programme of Action and the DDA share the common goals of enhancing LDC participation in world trade.

Accession to the WTO and further integration into the multilateral trading system remain important goals for several countries, LDCs included.⁶⁶ The Doha Declaration states that the accession of LDCs is a priority, and members have agreed to facilitate and accelerate negotiations with these countries. The Sub-Committee monitors LDC accessions on the basis of WTO Secretariat and other reports on the accession process. In 2012, it strengthened the accession guidelines for LDCs from 2002, with the aim of streamlining the accession process for these countries. The revised guidelines set benchmarks for goods tariffs and services commitments, for improving transparency in accession negotiations, and stress the importance of S&D provisions, transition periods and technical assistance.⁶⁷

(e) Promoting transparency on preferential tariffs and regional trade agreements

The CTD provides WTO members with the opportunity to better understand and keep track of developments in preferential trade arrangements (PTAs) and regional trade agreements (RTAs). It reviews members’ notifications of preferential tariff treatment accorded by developed countries to products from developing countries, in accordance with the GSP and in line with the provisions of the Enabling Clause. Following the establishment of the Transparency Mechanism for PTAs in 2010,⁶⁸ the CTD also receives notifications of other non-reciprocal preferential schemes implemented by WTO members. An example is the EU’s use of preferential tariffs for products from Pakistan to help the country recover from floods.⁶⁹

The CTD also reviews notifications from members of RTAs among developing countries, which are notified under the Enabling Clause or the Transparency Mechanism for RTAs.⁷⁰ Since the establishment of the Transparency Mechanism in 2006, the following RTAs have been considered: Egypt-Turkey, Pakistan-Sri Lanka, Pakistan-Malaysia, Chile-India, and India-Malaysia. These notifications have greatly improved information sharing on the trend of increasing trade cooperation among developing countries.

(f) **Overseeing implementation of trade-related technical assistance**

The CTD oversees implementation of the WTO's trade-related technical assistance (TRTA) programmes. The main purpose of TRTA is to enhance countries' human and institutional capacities to take full advantage of the rules-based multilateral trading system, to deal with the challenges this presents, to enforce their rights and to respect their obligations. Trade capacity-building programmes are also an important part of the Aid for Trade work programme.

The WTO's Biennial Technical Assistance and Training Plans indicate how the assistance is provided.⁷¹ A Progressive Learning Strategy (PLS) allows participants to register for different training levels (introduction, intermediate or advanced) depending on their familiarity with the subject. They can also choose a generalist or a specialist path, according to their professional needs.

Some 70 per cent of the WTO's technical assistance is financed by donations from WTO members provided

through the Doha Development Agenda Global Trust Fund. The remaining 30 per cent is provided from the WTO's regular budget. The Global Trust Fund is closely monitored by the WTO's Committee on Budget, Finance and Administration and the CTD.

(g) **Improving special and differential treatment provisions**

Special and differential treatment provisions for developing countries are contained in WTO agreements, ministerial decisions and General Council decisions.⁷² However, developing countries consistently raise concerns about their inability to utilize them. In order to rectify this problem, ministers, in Paragraph 44 of the 2001 Doha Ministerial Declaration, instructed that all S&D provisions be reviewed, with a view to strengthening them and making them more precise, effective and operational. These negotiations take place in special sessions of the CTD.

The special sessions have considered many proposals submitted by developing countries. One of the outcomes of the committee's work was the adoption by ministers of five S&D proposals related to LDC issues in the Hong Kong Ministerial Declaration of 2005. The major decision was to grant duty-free and quota-free market access to all products originating from LDCs.⁷³ The special session also completed its work on the Monitoring Mechanism on S&D, which was adopted at the WTO's Ninth Ministerial Conference (see above). The special session continues to work on other proposals and works with other WTO bodies which have received S&D proposals.

Endnotes

- 1 The preamble to the Marrakesh Agreement Establishing the WTO expressly makes these points. It adds that there is a need for positive efforts designed to ensure that developing countries, and in particular LDCs, secure a share in the growth of international trade commensurate with the needs of their economic development. Many provisions in the WTO agreements refer to the special needs and serious difficulties of developing countries and LDCs and the burden of reform on these countries. Part IV of the General Agreement on Tariffs and Trade (GATT), which was added in 1965, contains a number of clauses intended to address some of the concerns of developing countries.
- 2 The terms-of-trade approach has been criticized by practitioners and other academics pointing to the importance of political considerations rather than trade tax revenue/terms-of-trade motivations in the real world. Ethier (2004) has formalized a political externality-driven approach to trade agreements and Ethier (2013) elegantly summarizes the related literature to date regarding the “practitioners’ common wisdom”. However, early on, Bagwell and Staiger (2002) argued that political economy models do not provide a new rationale for the existence of trade agreements, but simply employ a different language. This debate continues, but for the present purpose, it suffices to note that in the political economy approach, as in the terms-of-trade theory to trade agreements, the principle of reciprocity is of central importance, as it mobilizes exporters to oppose protectionist lobbies in their own country.
- 3 For small developing countries, in particular, a multilateral (MFN-based) approach also acts as an insurance against the formation of preferential hub-and-spokes agreements (trade agreements between a large country and several small countries) to which they are not a party. Multilateral trade opening recreates a level playing field among small developing countries in terms of their access to the markets of large countries (Baldwin, 1996).
- 4 See, for instance, IMF (2000) which describes in its October 2000 *World Economic Outlook* a range of country experiences with the transition towards further market opening.
- 5 Maggi and Rodriguez-Clare (2007) demonstrate that the terms-of-trade and the commitment approach are not mutually exclusive and may both apply to any given trade agreement. This is also important because it is difficult to explain under the commitment approach why the “anchor” country would engage in (costly) enforcement procedures if it did not expect noteworthy benefits itself. The threat of retaliatory action associated with non-compliance must be credible in order for a trade agreement to serve as a commitment device.
- 6 This refers in particular to Rose’s (2004) study. Subsequent studies besides Subramanian and Wei (2007) that have made the appropriate corrections, notably Rose (2005) as well as Tomz et al. (2007), have then all found positive effects of WTO membership on trade. Eicher and Henn (2011) combine the three approaches and make further adjustments to better disentangle the effects of overlapping WTO and preferential trade arrangement memberships. Further qualifying the results of Subramanian and Wei (2007), they continue to find positive WTO effects, in particular in relation to WTO accession and for trade among proximate developing countries. In an extension of the gravity model, testing directly Bagwell and Staiger’s (1999; 2003) basic theory of the multilateral trading system, the authors find that countries with greater sway over their terms-of-trade obtain higher trade gains from WTO membership, thus confirming the explanatory power of this framework. Finally, Felbermayer and Kohler (2006) and Helpman et al. (2008) arrive at significantly positive results of GATT/WTO membership on trade, when the creation of new trade relationships (the so-called “extensive” margin of trade) is taken into account.
- 7 Horn et al. (2010) note that trade agreements are necessarily (and efficiently) incomplete given the contractual costs associated with writing a highly detailed agreement and the impossibility of foreseeing every eventuality that may arise among members in the future. Bagwell and Staiger (2005) acknowledge that any government may wish to use some of the committed policy instruments as a “legitimate” response to unforeseen events in the future (external “shocks”).
- 8 In the WTO, for instance, so-called “safeguards” under GATT Article XIX and the Agreement on Safeguards are available to all members. Again, authors such as Regan (2006) have criticized the explanation of a safeguard mechanism on the basis of the terms-of-trade approach to trade agreements, citing its inability to explain certain features of safeguard provisions in practice. While not doubting the need for some form of escape in an international trade agreement, Regan (2006) observes that a political approach can better explain the conditions attached to the use of such escapes in the real world, in line with the work of Ethier (2004).
- 9 The need for government intervention is generally justified by the existence of market failures.
- 10 The home market effect links a large domestic market, where increasing returns to scale can be realized, to the development of a competitive export sector. Further reductions in trade costs can magnify the advantage of a large country, as differences in market size become relatively more important.
- 11 The authors distinguish between the mean of a country’s trade barriers, which could remain unchanged for various distributions of its policy schedule, i.e. different degrees of uncertainty faced by its trading partner. In fact, the authors also find that the uncertainty-decreasing motive is relatively more important when trade costs are reduced, i.e. in a world that has become more integrated, when the trading environment is more uncertain and with a higher degree of income-risk aversion.
- 12 See WTO document WT/MIN(13)/38.
- 13 The requirement to negotiate only applied where the applicant proposed to exceed a negotiated tariff binding.
- 14 Original GATT Article XVIII.2(a).
- 15 Hudec (1987 p. 24-25).
- 16 Sri Lanka, a predominant user of the exception, described the conditions for its use, and in particular the requirement to seek prior approval for any measures applied under it, as so onerous as to “practically destroy... the benefits that it professes to confer” (Hudec, 1987 p. 25). See also Dam (1970 p. 228).
- 17 Jackson (1969 p. 639).
- 18 GATT Analytical Index, pp. 394-395. See also Sonia Rolland (2012, Annex 2).
- 19 Article 4 of the TRIMs Agreement is also linked to the requirements set out in GATT Article XVIII as it provides for temporary deviations from national treatment and quantitative restrictions obligations to the extent permitted under GATT Article XVIII, the 1994 Understanding on the Balance-of-Payment Provisions of the GATT, and the 1979 Declaration on Trade Measures Taken for Balance-of-Payments Purposes.
- 20 See document WT/COMTD/39/Add.1.
- 21 See document WT/COMTD/N/39. In the first WTO dispute, following a consultations request by Singapore regarding an import ban imposed by Malaysia, Malaysia notified its import restrictions under Article XVIII:C. The parties disagreed as to whether Malaysia was entitled to invoke this exception but

- Singapore subsequently withdrew its complaint (documents WT/DSB/M/2 and WT/DSB/M/6). GATT Article XVIII also contains Sections A and D. Section A allows for developing countries to negotiate modifications of concessions to promote the establishment of an industry. It has been invoked nine times, all prior to the establishment of the WTO (*GATT Analytical Index*, pp. 500-501). Section D, which provides flexibilities similar to Section C for more advanced developing countries, has never been invoked (*GATT Analytical Index*, p. 511).
- 22 The continuation of the special and differential treatment provision under the provisions of Article 9.4 for an additional period has been under consideration in the Doha Round negotiations on agriculture (paragraph 164 of document TN/AG/W/4/Rev.4).
- 23 See Annex J of document TN/AG/W/4/Rev.4.
- 24 See document WT/MIN(13)/37.
- 25 GATT, Article XXVIII bis(3)(a). Article XXVIII bis was added during the 1955 review negotiations.
- 26 GATT, Article XXXVI:8, added in 1965.
- 27 A similar formulation is contained in the Enabling Clause (L/4903, para. 5).
- 28 WTO document WT/MIN(01)/DEC/1, paras. 13 and 16.
- 29 See, for example, the Consolidated List of Offers of the United Kingdom in the Dillon Round: all tariff concessions are offered either to the US or the EEC; available at http://www.wto.org/english/docs_e/gattbilaterals_e/Dillon_1960_61/500175-0002/500175-0002.pdf.
- 30 Dam (1970 p. 230) reports that "[o]f 4,400 tariff concessions made in the Dillon Round, only 160 were on items then considered to be of export interest to less-developed countries."
- 31 Virtually all tariffs on agricultural products were bound in the Uruguay Round.
- 32 See document L/3545, 28 June 1971.
- 33 See document MTN/TAR/W/23, 2.
- 34 See *EC – Tariff Preferences* (WT/DS246).
- 35 See document WT/MIN(05)/DEC, Annex F.
- 36 "Duty-Free and Quota-Free (DFQF) Market Access For Least-Developed Countries", Ministerial Decision of 7 December 2013, WT/MIN(13)/44 – WT/L/919, 11 December 2013.
- 37 Among the specific LDC schemes are Canada's Least-Developed Country Tariff (LDCT) and the EU's Everything But Arms (EBA) initiatives. In addition, LDCs and other developing countries have benefited from regional preferential schemes, such as the EU's arrangement for Africa, Caribbean and Pacific (ACP) countries and the US African Growth and Opportunity Act (AGOA) and the Caribbean Basin Initiative (CBI).
- 38 See document WT/MIN(05)/DEC, Annex F.
- 39 "Preferential Rules of Origin for Least-Developed Countries", Ministerial Decision of 7 December 2013, WT/MIN(13)/42 – WT/L/917, 11 December 2013.
- 40 See document WT/L/847.
- 41 "Operationalization of the Waiver Concerning Preferential Treatment to Services and Service Suppliers of Least-Developed Countries", Ministerial Decision of 7 December 2013, WT/MIN(13)/43 – WT/L/918, 11 December 2013.
- 42 See document WT/MIN(11)/W/2.
- 43 See documents WT/MIN (13)/45 and WT/L/920.
- 44 See document WT/L/806.
- 45 An example is the EU's use of preferential tariffs for products from Pakistan to help the country recover from floods (document WT/COMTD/N/41).
- 46 The WTO also works in partnership with multilateral agencies, regional organizations and development banks involved in the provision of TRTA, in their respective areas of competence.
- 47 For more information on the EIF, see www.enhancedif.org.
- 48 See document WT/MIN(01)/ST/97.
- 49 See STDF Medium-term Strategy 2012-2016. Available online at: http://www.standardsfacility.org/Files/KeyDocs/STDF_367_Medium_Term_Strategy_Eng.pdf.
- 50 Ibid. For more on STDF, see <http://www.standardsfacility.org/en/index.htm>.
- 51 See Article III (4), Marrakesh Agreement Establishing the WTO.
- 52 For example, these countries spearheaded the inclusion in the draft International Trade Organization Charter and subsequently in the GATT of provisions allowing for government assistance for economic development, as is provided for in GATT Article XVIII.
- 53 Its three articles are XXXVI (principles and objectives), XXXVII (commitments) and XXXVIII (joint action).
- 54 Its terms of reference require it to serve as the focal point for consideration and coordination of work on development and engagement with developing countries within the WTO. The terms of reference can be consulted in WTO document WT/L/46 of 23 February 1995.
- 55 See document WT/COMTD/W/113.
- 56 See document TN/AG/W/4/Rev.4 of 6 December 2008.
- 57 Ministers established this work programme in September 1998. See document WT/L/274.
- 58 See, for example, ministerial mandates on this work programme at the eighth and ninth Ministerial Conferences. Available in documents WT/L/843 and WT/MIN (13)/32, WT/L/907 respectively.
- 59 See document WT/MIN(13)/32 or WT/L/907.
- 60 See document WT/MIN(11)/W/2.
- 61 See documents WT/MIN (13)/45 and WT/L/920.
- 62 See Paragraph 35, Doha Ministerial Declaration.
- 63 See documents WT/MIN (13)/33 and WT/L/908.
- 64 See documents WT/COMTD/M/89 and WT/COMTD/AFT/M/29.
- 65 For the latest, see document WT/COMTD/LDC/W/58.
- 66 Since the WTO was established, 32 members have joined through the accession process.
- 67 For details, see document WT/L/508/Add.1 of 30 July 2012.
- 68 See document WT/L/806.
- 69 See document WT/COMTD/N/41.
- 70 See document WT/L/671.
- 71 These plans contain a range of products including e-learning courses, national and regional seminars, Regional Trade Policy Courses (RTPCs), Geneva-based courses, the Advanced Trade Policy Course (ATPC), thematic courses, reference centres, academic support programmes, the WTO Chairs Programme (WCP) as well as internship programmes (Netherlands Trainee Programme, Mission Internship Programme etc.).
- 72 For example, there are at least 139 such provisions in the WTO agreements alone. See Special and Differential Treatment Provisions in WTO Agreements and Decisions; document WT/COMTD/W196.
- 73 Flexibilities exist for developed country and developing country members that may have difficulty in meeting this objective currently. See below discussion on non-preferential market access for developing and least-developed countries.

G. Conclusions

The very first World Trade Report, published in 2003, focused on trade and development. Exploring the economic link between these two areas, it examined how the Doha Round – which had been launched just two years earlier – could foster development.

This report has re-examined the topic a decade later by looking at four recent trends that affect the interplay between trade and development. Many developing countries, especially those in the G-20, have experienced unprecedented growth. International production sharing is being taken to a new level through global supply chains and increasingly involves trade and investments between developing countries. Increases in the prices of agricultural products and natural resources have been significant and are opening new growth opportunities for many developing countries. Macroeconomic shocks now have global repercussions requiring concerted action by countries.

The report has shown how integration into the global economy has gone hand-in-hand with the economic success of many developing countries. This would not have been possible if they had not undertaken trade opening that allowed them to take advantage of the opportunities provided by world markets. At the same time, the growing domestic markets in these developing countries provide an opportunity for those still lagging behind. The WTO has played an important role in this process by providing a trading environment with clearly defined rules while at the same time allowing developing countries to take advantage of flexibilities in implementing them since there are differences in the ability of members to implement obligations.

The report has shown how global value chains can facilitate the integration of developing countries into the world economy, by allowing countries to focus on specific tasks rather than all parts of a value chain. Global value chains (GVCs) have been expanding since the 1970s, but they have intensified in the recent past alongside our understanding of their impact on development. Data on value chain linkages are still scarce but the available information shows that they have changed the direction of trade, from trading between developed countries (North-North) to trade between developed and developing countries (North-South), and to trade between developing countries (South-South). The services sector is the glue that holds global value chains together. It constitutes a far more important component of trade (in value-added terms) than was

previously believed and could provide ample potential for developing countries to participate in value chains, especially if they lag behind in the physical infrastructure required for trading in merchandise goods.

At the same time, significant numbers of low-income countries, particularly LDCs, have not been able to connect to GVCs in a significant manner. Even if initial GVC integration is achieved, the benefits are not automatic. Among other reasons, developing countries initially join GVCs performing low-skill tasks and value capture at these stages is low relative to activities which are typically the domain of lead firms in GVCs. Upgrading remains a challenge for many developing countries.

Although the tariffs applied by countries continue to fall, many obstacles remain that hinder participation by developing countries in global value chains. These obstacles include the lack of relevant skills, poor infrastructure, the high cost of meeting technical regulations and standards, and the elevated level of protection on products of interest to developing countries. The report stresses the importance of the Trade Facilitation Agreement concluded at the WTO's Ministerial Conference in Bali at the end of 2013. Designed to streamline border procedures, increase transparency, and reduce transaction costs and unnecessary red tape, the Agreement, when implemented, would boost the efficiency of value chains.

Another trend identified in the report is the increase in the prices of primary commodities. In the 2003 *World Trade Report*, a section was dedicated to the decline in commodity prices and the report stressed the need for countries to move out of these sectors to ensure more sustainable development. This “need” is no longer evident although countries of course remain well advised to reduce risk through economic diversification. In the last decade, some economies have grown thanks to the increased revenue from exports of food and natural resources. The risk of significant price declines currently seems low given the strong demand for commodities in many large developing economies. Global value chains have been a factor in assisting the development of many countries and this includes supply chains for agricultural products. High food prices, however, pose a challenge to food security in net-food-importing countries. WTO agreements have mechanisms that help mitigate the problem and members are presently negotiating flexibilities like those provided by the Bali Decision on Public Stockholding for Food Security Purposes.

The dependence of developed and developing economies on one another was firmly illustrated by the 2008-09 crisis. A notable feature of the response to the crisis was the spirit of multilateral cooperation among members which worked to limit the number of trade-restrictive measures taken. The WTO's rules-based system and its monitoring of members' policy responses played a crucial role in keeping protectionist responses under control. Data show that countries which adopted more restrictive measures did not recover faster and that, instead, international cooperation worked relatively well to ensure that markets remained open and that capital flowed to the most affected economies. Nevertheless, the crisis struck when governments in many countries had sufficient fiscal capacity to respond aggressively with economic stimulus packages. Under different circumstances, the outcome may have been different.

In sum, the report has shown how trade and the WTO have contributed significantly to the unprecedented economic development that has taken place in the last decade and a half. Trade has allowed many developing countries to benefit from the opportunities created by emerging new markets, to integrate into the world market through global value chains at lower costs, and to reap the rewards from higher world commodity prices. The WTO has played a key role by providing certainty regarding the commitments of its members, thereby creating a predictable environment that allowed economic activity to flourish. It has also given flexibilities to developing countries to address their specific economic needs and has helped contain protectionism

in the face of the greatest economic crisis in 70 years, thus helping to safeguard the economic gains made by developing countries in the past.

Nevertheless, a long road still lies ahead for many developing economies. Least-developed countries have per capita income which is just 4 per cent of the average income in developed economies. This year's *World Trade Report* makes it clear that an open, non-discriminatory, rules-based multilateral trading system is a necessary tool to make trade work more effectively for development. The decisions reached at the Bali Ministerial Conference are important contributions of the WTO to sustaining the momentum of developing countries. But they are only a first step in updating the trading system. The WTO needs to continue to update and develop new rules to respond to recent trends, while continuing to allow for the flexibilities that are needed for countries to comply with such rules and disciplines.

Looking towards the future, trade and the multilateral trading system have central roles to play in addressing the development challenges of a post-2015 world. The four trends of the last 10 years and the history of development show that trade is one of the key enablers of development. Trade has played a central role in lifting millions of people out of poverty in recent years and helped to achieve many of the UN Millennium Development Goals (MDGs). The WTO and its rules should be seen as an integral part of the enabling environment for realizing any post-2015 development agenda.

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Technical notes

Composition of regions and other economic groupings				
Regions				
North America				
Bermuda	Canada*	Mexico*	United States of America*	
Other territories in the region not elsewhere specified (n.e.s.)				
South and Central America and the Caribbean				
Antigua and Barbuda*	Chile*	El Salvador*	Panama*	Trinidad and Tobago*
Argentina*	Colombia*	Grenada*	Paraguay*	Uruguay*
Aruba, the Netherlands with respect to*	Costa Rica*	Guatemala*	Peru*	Bolivarian Rep. of Venezuela*
Bahamas**	Cuba*	Guyana*	Saint Kitts and Nevis*	
Barbados*	Curaçao*	Haiti*	Saint Lucia*	
Belize*	Dominica*	Honduras*	Saint Vincent and the Grenadines*	
Bolivia, Plurinational State of*	Dominican Republic*	Jamaica*	Sint Maarten*	
Brazil*	Ecuador*	Nicaragua*	Suriname*	
Other territories in the region n.e.s.				
Europe				
Albania*	Czech Republic*	Hungary*	Malta*	Slovak Republic*
Andorra**	Denmark*	Iceland*	Montenegro*	Slovenia*
Austria*	Estonia*	Ireland*	Netherlands*	Spain*
Belgium*	Finland*	Italy*	Norway*	Sweden*
Bosnia and Herzegovina**	France*	Latvia*	Poland*	Switzerland*
Bulgaria*	FYR Macedonia*	Liechtenstein*	Portugal*	Turkey*
Croatia*	Germany*	Lithuania*	Romania*	United Kingdom*
Cyprus*	Greece*	Luxembourg*	Serbia**	
Other territories in the region n.e.s.				
Commonwealth of Independent States (CIS)^a				
Armenia*	Georgia ^a	Moldova, Republic of*	Turkmenistan	
Azerbaijan**	Kazakhstan**	Russian Federation*	Ukraine*	
Belarus**	Kyrgyz Republic*	Tajikistan*	Uzbekistan**	
Other territories in the region n.e.s.				
Africa				
Algeria**	Congo*	Guinea*	Morocco*	South Africa*
Angola*	Côte d'Ivoire*	Guinea-Bissau*	Mozambique*	Sudan**
Benin*	Dem. Rep. of the Congo*	Kenya*	Namibia*	Swaziland*
Botswana*	Djibouti*	Lesotho*	Niger*	Tanzania*
Burkina Faso*	Egypt*	Liberia, Republic of**	Nigeria*	Togo*
Burundi*	Equatorial Guinea**	Libya**	Rwanda*	Tunisia*
Cabo Verde*	Eritrea	Madagascar*	São Tomé and Príncipe**	Uganda*
Cameroon*	Ethiopia**	Malawi*	Senegal*	Zambia*
Central African Republic*	Gabon*	Mali*	Seychelles**	Zimbabwe*
Chad*	Gambia*	Mauritania*	Sierra Leone*	
Comoros**	Ghana*	Mauritius*	Somalia	
Other territories in the region n.e.s.				

*WTO members

**Observer governments

^aGeorgia is not a member of the Commonwealth of Independent States but is included in this group for reasons of geography and similarities in economic structure.

Middle East				
Bahrain, Kingdom of*	Israel*	Lebanese Republic**	Saudi Arabia, Kingdom of*	Yemen*
Iran**	Jordan*	Oman*	Syrian Arab Republic**	
Iraq**	Kuwait, the State of*	Qatar*	United Arab Emirates*	
Other territories in the region n.e.s.				
Asia				
Afghanistan**	Hong Kong, China*	Malaysia*	Papua New Guinea*	Timor-Leste
Australia*	India*	Maldives*	Philippines*	Tonga*
Bangladesh*	Indonesia*	Mongolia*	Samoa*	Tuvalu
Bhutan**	Japan*	Myanmar*	Singapore*	Vanuatu*
Brunei Darussalam*	Kiribati	Nepal*	Solomon Islands*	Viet Nam*
Cambodia*	Korea, Republic of*	New Zealand*	Sri Lanka*	
China*	Lao People's Dem. Rep.*	Pakistan*	Taipei, Chinese*	
Fiji*	Macao, China*	Palau	Thailand*	
Other territories in the region n.e.s.				
Other Groups				
ACP (African, Caribbean and Pacific countries)				
Angola	Côte d'Ivoire	Guyana	Nauru	Somalia
Antigua and Barbuda	Cuba	Haiti	Niger	South Africa
Bahamas	Dem. Rep. of the Congo	Jamaica	Nigeria	Sudan
Barbados	Djibouti	Kenya	Niue	Suriname
Belize	Dominica	Kiribati	Palau	Swaziland
Benin	Dominican Republic	Lesotho	Papua New Guinea	Tanzania
Botswana	Equatorial Guinea	Liberia, Republic of	Rwanda	Timor-Leste
Burkina Faso	Eritrea	Madagascar	Saint Kitts and Nevis	Togo
Burundi	Ethiopia	Malawi	Saint Lucia	Tonga
Cabo Verde	Fiji	Mali	Saint Vincent and the Grenadines	Trinidad and Tobago
Cameroon	Gabon	Marshall Islands	Samoa	Tuvalu
Central African Republic	Gambia	Mauritania	São Tomé and Príncipe	Uganda
Chad	Ghana	Mauritius	Senegal	Vanuatu
Comoros	Grenada	Micronesia	Seychelles	Zambia
Congo	Guinea	Mozambique	Sierra Leone	Zimbabwe
Cook Islands	Guinea-Bissau	Namibia	Solomon Islands	
Cook Islands				
<i>North Africa</i>				
Algeria	Egypt	Libya	Morocco	Tunisia
<i>Sub-Saharan Africa</i>				
<i>Western Africa</i>				
Benin	Gambia	Guinea-Bissau	Mauritania	Senegal
Burkina Faso	Ghana	Liberia, Republic of	Niger	Sierra Leone
Cabo Verde	Guinea	Mali	Nigeria	Togo
Côte d'Ivoire				
<i>Central Africa</i>				
Burundi	Central African Republic	Congo	Equatorial Guinea	Rwanda
Cameroon	Chad	Dem. Rep. of the Congo	Gabon	São Tomé and Príncipe

Eastern Africa				
Comoros	Ethiopia	Mauritius	Somalia	Tanzania
Djibouti	Kenya	Seychelles	Sudan	Uganda
Eritrea	Madagascar			
Southern Africa				
Angola	Lesotho	Mozambique	South Africa	Zambia
Botswana	Malawi	Namibia	Swaziland	Zimbabwe
Territories in Africa n.e.s.				
Asia				
East Asia (including Oceania):				
Australia	Indonesia	Mongolia	Samoa	Tuvalu
Brunei Darussalam	Japan	Myanmar	Singapore	Vanuatu
Cambodia	Kiribati	New Zealand	Solomon Islands	Viet Nam
China	Lao People's Dem. Rep.	Papua New Guinea	Taipei, Chinese	
Fiji	Macao, China	Philippines	Thailand	
Hong Kong, China	Malaysia	Republic of Korea	Tonga	
West Asia:				
Afghanistan	Bhutan	Maldives	Pakistan	Sri Lanka
Bangladesh	India	Nepal		
Other countries and territories in Asia and the Pacific n.e.s.				
LDCs (least-developed countries)				
Afghanistan	Comoros	Kiribati	Myanmar	Sudan
Angola	Dem. Rep. of the Congo	Lao People's Dem. Rep.	Nepal	Timor-Leste
Bangladesh	Djibouti	Lesotho	Niger	Togo
Benin	Equatorial Guinea	Liberia, Republic of	Rwanda	Tuvalu
Bhutan	Eritrea	Madagascar	Samoa	Uganda
Burkina Faso	Ethiopia	Malawi	São Tomé and Príncipe	Tanzania
Burundi	Gambia	Maldives	Senegal	Vanuatu
Cambodia	Guinea	Mali	Sierra Leone	Yemen
Central African Republic	Guinea-Bissau	Mauritania	Solomon Islands	Zambia
Chad	Haiti	Mozambique	Somalia	
Six East Asian traders				
Hong Kong, China	Republic of Korea	Singapore	Taipei, Chinese	Thailand
Malaysia				
Regional Integration Agreements				
Andean Community (CAN)				
Bolivia, Plurinational State of	Colombia	Ecuador	Peru	
ASEAN (Association of South East Asian Nations) / AFTA (ASEAN Free Trade Area)				
Brunei Darussalam	Indonesia	Malaysia	Philippines	Thailand
Cambodia	Lao People's Dem. Rep.	Myanmar	Singapore	Viet Nam
CACM (Central American Common Market)				
Costa Rica	El Salvador	Guatemala	Honduras	Nicaragua
CARICOM (Caribbean Community and Common Market)				
Antigua and Barbuda	Belize	Guyana	Montserrat	Saint Vincent and the Grenadines
Bahamas	Dominica	Haiti	Saint Kitts and Nevis	Suriname
Barbados	Grenada	Jamaica	Saint Lucia	Trinidad and Tobago

CEMAC (Economic and Monetary Community of Central Africa)				
Cameroon	Chad	Congo	Equatorial Guinea	Gabon
Central African Republic				
COMESA (Common Market for Eastern and Southern Africa)				
Burundi	Egypt	Libya	Rwanda	Uganda
Comoros	Eritrea	Madagascar	Seychelles	Zambia
Dem. Rep. of the Congo	Ethiopia	Malawi	Sudan	Zimbabwe
Djibouti	Kenya	Mauritius	Swaziland	
ECCAS (Economic Community of Central African States)				
Angola	Central African Republic	Dem. Rep. of the Congo	Gabon	São Tomé and Príncipe
Burundi	Chad	Equatorial Guinea	Rwanda	
Cameroon	Congo			
ECOWAS (Economic Community of West African States)				
Benin	Côte d'Ivoire	Guinea	Mali	Senegal
Burkina Faso	Gambia	Guinea-Bissau	Niger	Sierra Leone
Cabo Verde	Ghana	Liberia, Republic of	Nigeria	Togo
EFTA (European Free Trade Association)				
Iceland	Liechtenstein	Norway	Switzerland	
European Union (28)				
Austria	Denmark	Hungary	Malta	Slovenia
Belgium	Estonia	Ireland	Netherlands	Spain
Bulgaria	Finland	Italy	Poland	Sweden
Croatia	France	Latvia	Portugal	United Kingdom
Cyprus	Germany	Lithuania	Romania	
Czech Republic	Greece	Luxembourg	Slovak Republic	
GCC (Gulf Cooperation Council)				
Bahrain, Kingdom of	Oman	Qatar	Saudi Arabia, Kingdom of	United Arab Emirates
Kuwait, the State of				
MERCOSUR (Southern Common Market)				
Argentina	Brazil	Paraguay	Uruguay	
NAFTA (North American Free Trade Agreement)				
Canada	Mexico	United States		
SAFTA (South Asia Free Trade Agreement)				
Bangladesh	India	Nepal	Pakistan	Sri Lanka
Bhutan	Maldives			
SAPTA (South Asian Preferential Trade Arrangement)				
Bangladesh	India	Nepal	Pakistan	Sri Lanka
Bhutan	Maldives			
SADC (Southern African Development Community)				
Angola	Lesotho	Mauritius	Seychelles	Tanzania
Botswana	Madagascar	Mozambique	South Africa	Zambia
Dem. Rep. of the Congo	Malawi	Namibia	Swaziland	Zimbabwe
WAEMU (West African Economic and Monetary Union)				
Benin	Côte d'Ivoire	Mali	Senegal	Togo
Burkina Faso	Guinea-Bissau	Niger		

WTO members are frequently referred to as "countries", although some members are not countries in the usual sense of the word but are officially "customs territories". The definition of geographical and other groupings in this report does not imply an expression of opinion by the Secretariat concerning the status of any country or territory, the delimitation of its frontiers, nor the rights and obligations of any WTO member in respect of WTO agreements. The colours, boundaries, denominations and classifications in the maps of the publication do not imply, on the part of the WTO, any judgement on the legal or other status of any territory, or any endorsement or acceptance of any boundary.

Throughout this report, South and Central America and the Caribbean is referred to as South and Central America. Aruba; the Bolivarian Republic of Venezuela; Hong Kong Special Administrative Region of China; the Republic of Korea; and the Separate Customs Territory of Taiwan, Penghu, Kinmen and Matsu are referenced as: Aruba, the Netherlands with respect to; Bolivarian Rep. of Venezuela; Hong Kong, China; Korea, Republic of; and Taipei, Chinese respectively.

The data supplied in the *World Trade Report 2014* are valid as of 1 April 2014.

Abbreviations and symbols

ACP	Africa, Caribbean and Pacific Countries
AGOA	African Growth and Opportunity Act
AOA	Agreement on Agriculture
AVE	Ad Valorem Equivalent
B2B	Business to Business
BAFT	Bankers Association for Finance and Trade
BEC	Broad Economic Categories
BP	British Petroleum
BRC	British Retail Consortium
BRICS Group	Brazil, Russia, India, China, South Africa
CBFA	Committee on Budget, Finance and Administration
CBI	Centre for the Promotion of Imports from Developing Countries
CEE	Central and Eastern Europe
CEPII	Centre d'études prospectives et d'informations internationales (French Research Center in International Economics)
CFS	UN Committee on World Food Security
CIS	Commonwealth of Independent States
CONTAG	Confederação dos Trabalhadores an Agricultura (Brazil)
CRS	Creditor Reporting System
CTD	WTO Committee on Trade and Development
CTD SS	WTO Committee on Trade and Development Special Session
CTS database	Consolidated Tariff Schedules database
DDA	Doha Development Agenda
DDAGTF	Doha Development Agenda Global Trust Fund
DFQF	Duty-Free and Quota-Free
DSB	WTO Dispute Settlement Body
DSU	Dispute Settlement Understanding
DTIS	Diagnostic Trade Integration Studies
EBA	Everything But Arms
EIF	Enhanced Integrated Framework
EITI	Extractive Industries Transparency Initiative
EKC	Environmental Kuznets Curve
EPI	Environmental Performance Index
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FDI	foreign direct investment
FVA	foreign value added
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
GDP	gross domestic product
GGFR	Global Gas Flaring Reduction (public-private partnership)
GlobalGAP	Global Good Agricultural Practice
GMP	good manufacturing practices
GSP	Generalized System of Preferences
GSTP	Global System of Trade Preferences Among Developing Countries

GTIS	Global Trade Information Services
GVCs	global value chains
HACCP	Hazard Analysis and Critical Control Points
HDI	Human Development Index
HLPE	High Level Panel of Experts on Food Security and Nutrition
HS	harmonized system
ICT	information and communication technology
IDB	Inter-American Development Bank
IEA	International Energy Agency
IFS	International Featured Standards
ILO	International Labour Office
IMF	International Monetary Fund
IMF WEO	International Monetary Fund World Economic Outlook
IP	intellectual property
IPR	intellectual property right
ISO	International Organization for Standardization
ITA	Information Technology Agreement
ITC	International Trade Centre
IVA	indirect value added
KPCS	Kimberley Process Certification Scheme
LDCs	least-developed countries
LDCT	least-developed country tariff
LEAF	linking environment and farming
LLDCs	land-locked developing countries
MDG	United Nations Millennium Development Goals
MFN	most-favoured nation
MTS	multilateral trading system
NAFTA	North American Free Trade Agreement
NAMA	non-agricultural market access
n.e.s.	not elsewhere specified
NIEs	newly-industrialized economies
NTMs	non-tariff measures
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
OIE	World Organization for Animal Health
OPEC	Organization of the Petroleum Exporting Countries
PECC	Pacific Economic Cooperation Council
PIH	Permanent Income Hypothesis
PLS	progressive learning strategy
PPP	purchasing power parity
PRSPs	Poverty Reduction Strategy Papers
PTAs	preferential trade agreements
QE	quantitative easing
R&D	research and development
RCA	revealed comparative advantage
RI	regional intensity
RRA	relative rate of assistance
RTAs	regional trade agreements

S&D	special and differential treatment
SCM	subsidies and countervailing measures
SDSN	Sustainable Development Solutions Network
SITC	Standard International Trade Classification
SME	small and medium-sized enterprises
SOEs	state-owned enterprises
SPS	sanitary and phytosanitary
SQF2000	Safety Quality Food 2000
STDF	Standards and Trade Development Facility
SVEs	small and vulnerable economies
SWFs	sovereign wealth funds
TBT	technical barriers to trade
TF	trade facilitation
TFP	Total Factor Productivity
TIM (spanish)	International Transit of Goods
TIVA Database	Trade in Value Added Database
TPRM	Trade Policy Review Mechanism
TPRs	Trade Policy Reviews
TRAINS	Trade Analysis and Information System
TRIMs	trade-related investment measures
TRIPS	trade-related aspects of intellectual property rights
TRTA	trade-related technical assistance
UK	United Kingdom
UN	United Nations
UN Comtrade Database	United Nations Commodity Trade Statistics Database
UNCTAD	United Nations Conference on Trade and Development
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
US	United States
USAID	United States Agency for International Development
VAX ratio	value-added exports to gross exports ratio
WDI	World Development Indicators
WEF	World Economic Forum
WGI	Worldwide Governance Indicators
WHO	World Health Organization
WIOD	World Input-Output Database
WITS	World Integrated Trade Solution
WTO	World Trade Organization
WTR	World Trade Report

The following symbols are used in this publication:

...	not available
0	figure is zero or became zero due to rounding
–	not applicable
US\$	United States dollars
UK£	UK pound

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WTO members

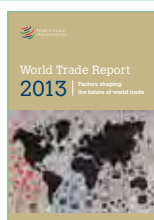
(As of 26 June 2014)

Albania	Germany	Norway
Angola	Ghana	Oman
Antigua and Barbuda	Greece	Pakistan
Argentina	Grenada	Panama
Armenia	Guatemala	Papua New Guinea
Australia	Guinea	Paraguay
Austria	Guinea-Bissau	Peru
Bahrain, Kingdom of	Guyana	Philippines
Bangladesh	Haiti	Poland
Barbados	Honduras	Portugal
Belgium	Hong Kong, China	Qatar
Belize	Hungary	Romania
Benin	Iceland	Russian Federation
Bolivia, Plurinational State of	India	Rwanda
Botswana	Indonesia	Saint Kitts and Nevis
Brazil	Ireland	Saint Lucia
Brunei Darussalam	Israel	Saint Vincent and the Grenadines
Bulgaria	Italy	Samoa
Burkina Faso	Jamaica	Saudi Arabia, Kingdom of
Burundi	Japan	Senegal
Cabo Verde	Jordan	Sierra Leone
Cambodia	Kenya	Singapore
Cameroon	Korea, Republic of	Slovak Republic
Canada	Kuwait, the State of	Slovenia
Central African Republic	Kyrgyz Republic	Solomon Islands
Chad	Lao People's Democratic Republic	South Africa
Chile	Latvia	Spain
China	Lesotho	Sri Lanka
Colombia	Liechtenstein	Suriname
Congo	Lithuania	Swaziland
Costa Rica	Luxembourg	Sweden
Côte d'Ivoire	Macao, China	Switzerland
Croatia	Madagascar	Chinese Taipei
Cuba	Malawi	Tajikistan
Cyprus	Malaysia	Tanzania
Czech Republic	Maldives	Thailand
Democratic Republic of the Congo	Mali	Togo
Denmark	Malta	Tonga
Djibouti	Mauritania	Trinidad and Tobago
Dominica	Mauritius	Tunisia
Dominican Republic	Mexico	Turkey
Ecuador	Moldova, Republic of	Uganda
Egypt	Mongolia	Ukraine
El Salvador	Montenegro	United Arab Emirates
Estonia	Morocco	United Kingdom
European Union	Mozambique	United States of America
Fiji	Myanmar	Uruguay
Finland	Namibia	Vanuatu
Former Yugoslav Republic of	Nepal	Venezuela, Bolivarian Republic of
Macedonia (FYROM)	Netherlands	Viet Nam
France	New Zealand	Yemen
Gabon	Nicaragua	Zambia
The Gambia	Niger	Zimbabwe
Georgia	Nigeria	

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Factors shaping the future of world trade

2013



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2010



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Trade policy commitments and contingency measures

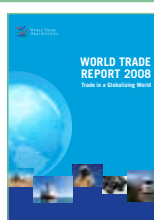
2009



The 2009 Report examines the range and role of contingency measures available in trade agreements. One of the Report's main objectives is to analyse whether WTO provisions provide a balance between supplying governments with the necessary flexibility to face difficult economic situations and adequately defining these in a way that limits their use for protectionist purposes.


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2008




The 2008 Report provides a reminder of what we know about the gains from international trade and highlights the challenges arising from higher levels of integration. It addresses the question of what constitutes globalization, what drives it, what benefits it brings, what challenges it poses and what role trade plays in this world of ever-growing inter-dependency.

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2007  On 1 January 2008 the multilateral trading system celebrated its 60th anniversary. The World Trade Report 2007 celebrates this landmark anniversary with an in-depth look at the General Agreement on Tariffs and Trade (GATT) and its successor the World Trade Organization – their origins, achievements, the challenges they have faced and what the future holds.


Exploring the links between subsidies, trade and the WTO

2006  The World Trade Report 2006 focuses on how subsidies are defined, what economic theory can tell us about subsidies, why governments use subsidies, the most prominent sectors in which subsidies are applied and the role of the WTO Agreement in regulating subsidies in international trade. The Report also provides brief analytical commentaries on certain topical trade issues.

Trade, standards and the WTO

2005  The World Trade Report 2005 seeks to shed light on the various functions and consequences of standards, focusing on the economics of standards in international trade, the institutional setting for standard-setting and conformity assessment, and the role of WTO agreements in reconciling the legitimate policy uses of standards with an open, non-discriminatory trading system.

Coherence

2004  The World Trade Report 2004 focuses on the notion of coherence in the analysis of interdependent policies: the interaction between trade and macroeconomic policy, the role of infrastructure in trade and economic development, domestic market structures, governance and institutions, and the role of international cooperation in promoting policy coherence.

Trade and development

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World Trade Organization
154, rue de Lausanne
CH-1211 Geneva 21
Switzerland
Tel: (41 22) 739 51 11
Fax: (41 22) 739 42 06
www.wto.org

WTO Publications
Email: publications@wto.org

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World Trade Report 2014

The *World Trade Report 2014* looks at four major trends that have changed the relationship between trade and development since the start of the millennium: the economic rise of developing economies, the growing integration of global production through supply chains, the higher prices for agricultural goods and natural resources, and the increasing interdependence of the world economy.

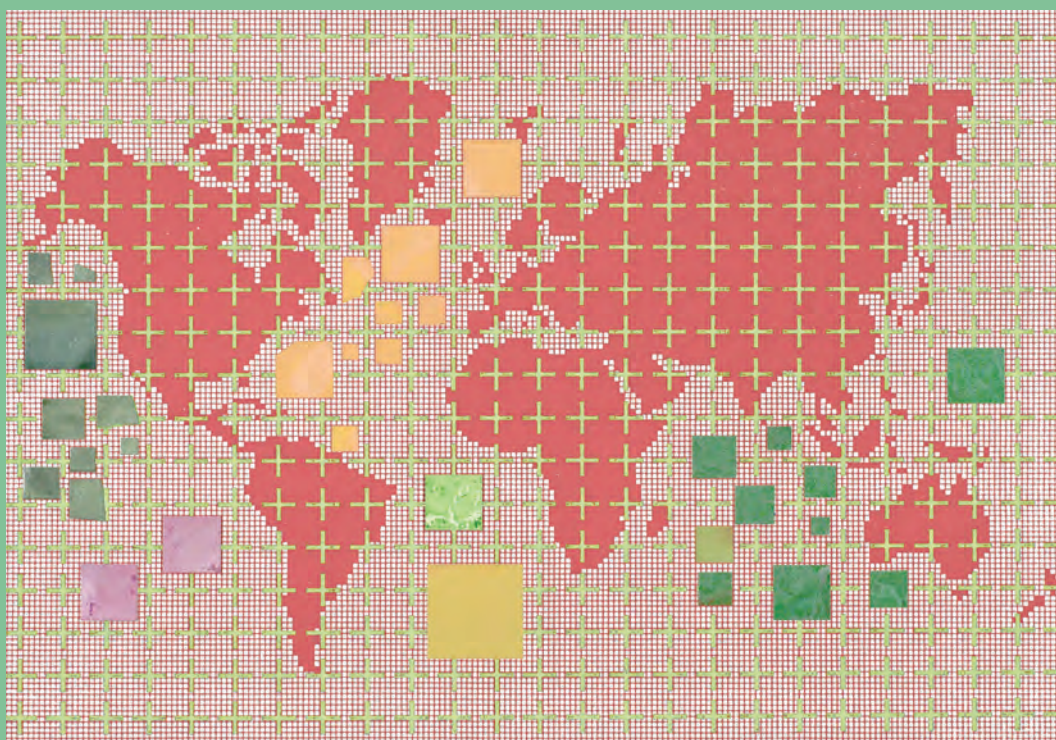
Many developing countries have experienced unprecedented growth and have integrated increasingly into the global economy, thereby opening opportunities for countries still lagging behind. However, important barriers still remain.

Integration into global value chains can make industrialization in developing countries easier to achieve. Upgrading to higher-value tasks within these supply chains can support further growth. But competitive advantage can be lost more easily, and achieving such upgrading can be challenging.

Higher prices for agricultural goods and natural resources have helped some developing countries achieve strong growth. But higher prices can cause strains for net importers of these goods.

Growing interdependence within the global economy allows countries to benefit more quickly from growth in other parts of the world. But it can also cause challenges as crises can be quickly transmitted across borders.

Many developing countries still have a long way to go in addressing their development challenges. The multilateral trading system provides developing countries, and particularly least-developed countries, with unique opportunities to do so. Further progress in the Post-Bali Agenda would therefore be important to making trade work more effectively for development.



Images (front and back covers)

Jean-Claude Prêtre, *DANAÉ WORLD SUITE*, 2001.

In this series (from which two prints are reproduced here), the artist wishes symbolically to portray a “movement” towards geopolitical peace. The full collection of 49 works is on display at the WTO. For more information, please visit the artist’s website at www.jcpretre.ch.

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