

The role of trade and policies in improving food security

by
Siemen van Berkum

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About the author

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Abstract

Positive trade effects on food security are not always evident in low-income food-deficit countries. These countries can improve food security, offer smallholders market opportunities and reduce consumers' vulnerability to external shocks by increasing productivity and efficiency in all segments of the food value chain. Developing competitive and inclusive food value chains requires both domestic macroeconomic policies to improve the sector's business environment and create opportunities outside the agricultural sector, and sector-specific targeted measures to promote smallholder participation in competitive value chains by reducing market access costs. Key elements of an agricultural development strategy are infrastructure investment to reduce transaction costs, improving smallholder access to markets and promoting their participation in food value chains through empowering and increasing their capacity to comply with food quality and safety requirements. Encouraging innovation and adoption of technologies in all segments of the value chain is crucial for upgrading and diversifying agricultural sector output. The latter leads to greater income generation, jobs outside of agriculture and increased export opportunities. Export diversification strengthens countries' resilience to trade shocks and reduces vulnerability to the rising costs of food imports.

Keywords: trade, competitiveness, diversification, food security, externalities, trade-offs, policies

1. Introduction

This paper analyses the impacts of trade on food system outcomes, with the aim to suggest policy options that support the competitive development of sustainable and inclusive value chains in low-income countries. Many low-income countries are food deficient and rely on imports to balance domestic supply with demand (FAO, 2019). The benefits of trade, however, do not automatically enhance the food security of the most vulnerable populations, which include smallholder farms in developing countries (IPES Food, 2017; OECD, 2019a,b; IISD, 2019). Moreover, trade can exacerbate the environmental challenges associated with food production, land use and climate change (Bellmann et al., 2019; Brown et al., 2019). This paper is concerned with tackling potential trade-offs between open trade and inclusive sustainable development in low-income countries where many rural households depend on small farms for income and employment.

While international trade in food plays an important role in increasing access to a wider variety of food than domestic production offers, and in stabilizing domestic markets by overcoming local food supply shortages, it might also expose importing countries to risks from external perturbations, as food price spikes in 2008 and 2012 have shown (e.g. Morrison and Sarris, 2016). The recent global spread of the coronavirus (COVID-19) and its disruptive consequences for food security have again illustrated the vulnerability of internationally connected food value chains (Swinnen and McDermott, 2020). This raises the question of which policies should be considered to reduce the propagation of international shocks to local food markets, without losing the benefits of open markets. This paper argues that with trade-compliant domestic policies that support sustainable and inclusive value chains, countries can strengthen the competitiveness of their food and agricultural sectors and enhance national food security.

This paper uses the food system approach to analyse the implications of trade in agricultural and food products for food system outcomes and brings forward several suggestions for trade-related policies and investments to counter potential trade-offs among social, economic and environmental objectives for achieving the Sustainable Development Goals. Firstly, chapter 2 discusses the benefits and potential trade-offs of trade. Next, chapter 3 presents an overview of trends in and drivers of international trade, showing low-income countries' positions in international agri-food trade. Agricultural development potential in Africa (with many food net importing countries) to enhance food security is discussed in chapter 4. Chapter 5 details the governance of international trade through price and other mechanisms regulating food trade, such as standards, showing the conditions under which small-scale farmers can engage in international trade. Chapter 6 suggests strategies to design and implement complementary trade and agricultural policies that are supportive of sustainable supply chain development in which small-scale farmers can participate and compete with foreign supply to underpin local food security. Chapter 7 provides some conclusions.

2. The role of trade and policies in providing food security

There is much historical evidence that international trade promotes economic growth, as it allows countries to use their resources more efficiently by specializing in products and services they can produce most competitively (e.g. Brooks and Matthews, 2015). Economic growth is assumed to contribute directly to poverty reduction, as it creates employment opportunities and reduces prices of food, among others, benefiting all – including the less affluent – consumers. Following this argument, there is a positive association between trade and food security, which contributes to food availability (importing when domestic production falls short of demand) and improves access to food (through increased economic growth, higher incomes and lower prices). Next, regarding food utilization, the third element of food security, with increased economic growth and incomes, trade also contributes to the nutrition of households. Trade makes food cheaper and, hence, allows better access and utilization for people. Also, trade may contribute to a more diversified diet by providing various food products not otherwise available locally. Regarding stability, the fourth element of food security, by balancing international food surplus and deficit, trade improves the stability of the three preceding elements (also by reducing seasonal effects on food availability) and makes local markets less prone to policy or weather shocks.

However, the positive effects of trade on food security are not always evident. Given the fact that only 10-15 per cent of global food production is traded internationally, the availability of food is determined by local

factors, among which poor rural infrastructure is mentioned as a primary constraint (FAO, 2019). Open trade may also eradicate local production potential in food-deficit countries by lowering prices for food products, which puts high pressure on local farmers. One of the most cited arguments against free trade is that trade liberalization increases food dependency (and import bills) and makes consumers vulnerable to external shocks in food availability (e.g. Koning and Pinstруп-Anderson, 2007; De Schutter, 2011). Also, the nutritional balance of increased access to cheaper and more diversified food is not evident, as by creating a “nutritional transition”, trade openness can also be responsible for obesity and disease due to increased access to unhealthy food (Global Panel, 2020). Lastly, whether trade openness will indeed induce food market stability is questioned by recent international price spikes (in 2007/2008 and 2011/2012), which caused hard times for consumers all over the world. In conclusion, international trade and policies to further encourage trade play an ambiguous role in the current food system. Figure 1 illustrates this ambiguity.

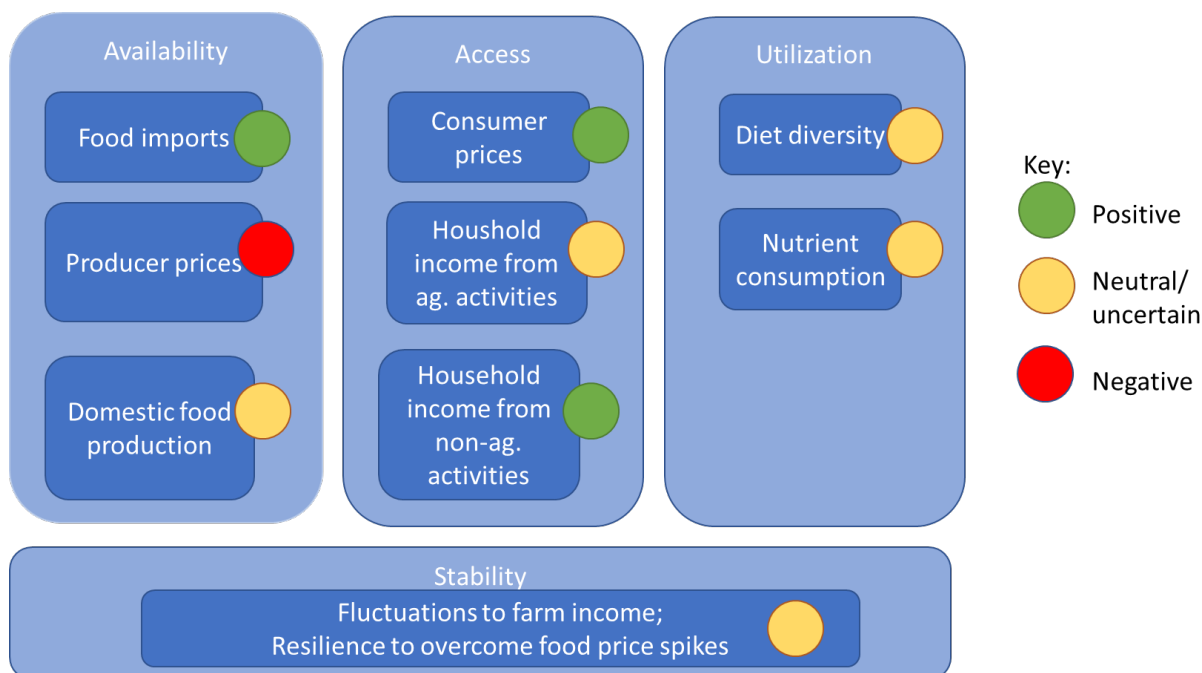


Figure 1: Channels of the impact of trade on the four dimensions of food security in food-deficit countries

On the whole, these arguments suggest that trade liberalization also changes the internal terms of trade, thereby creating a mixture of winners and losers as a consequence of how food prices are affected by trade reform. In this context, understanding price transmission, that is, how a change in an import tariff translates into a change in prices for domestic producers and consumers, is the key to considering the food security outcomes of trade reforms. McCorrison et al. (2013) point to infrastructure, information flows, taxes and subsidies as major factors to mediate price transmission effects across constituent groups, space and time.

It is also clear that next to trade, food security is greatly affected by macroeconomic factors (Diaz-Bonilla, 2015; Brooks and Matthews, 2015; OECD, 2019a, b). Indeed, macroeconomic factors influence the four components of food security through different channels. Domestic production and imports determine the availability of food (first component). Economic growth, generating employment opportunities and higher income levels, is strongly linked to food access (second component). In fact, it is evident that the ultimate driving force of global food security is the overall level of economic development, which affects each of its dimensions. Government revenues might also be used to implement policies and investments in favour of food security, such as research and development (affecting availability and stability, the first and fourth component of food security), basic health services, and food assistance and social protection programmes (affecting use/nutrition, the third component). Nutrient security pertains to the individual the most but is largely affected by income and access to food (e.g. Global Panel, 2017). From this perspective, actions that affect non-agricultural markets and employment, such as building infrastructure or ensuring equitable access to education, could be just as important for food and nutrition security as policies and investments in the agri-food sector. On the whole, this means that the discussion on trade and food security needs to be

placed within the context of an overall framework of macroeconomic and exchange rate policies (Diaz-Bonilla, 2015; OECD, 2019a, b).

The next chapters further describe and analyse the links between trade, food security and competitiveness to arrive at policy suggestions for enhancing competitiveness and sustainable inclusive agricultural development. Chapter 3 shows trends in trade and prices at international agri-food markets in recent decades and the positions of low-income countries at international markets in terms of food-import dependency. Potentials to increase domestic production to reduce food-import dependency are discussed next to the main structural and governance features of international markets that affect the opportunities of low-income countries to participate in international trade. To further develop these opportunities, policies supportive of developing sustainable and inclusive agri-food value chains are suggested.

3. Trends in international trade of food and agricultural commodities

3.1 Global trends

During the past half-century, in which agricultural production has trebled globally, trade in agricultural commodities and food products increased eight-fold with an acceleration in growth in the most recent two decades at close to 8 per cent annually in real terms (OECD, 2019a).¹ Although most food produced around the world is used domestically,² such figures indicate that trade increasingly contributes to feeding the world's population.

In value terms, international trade in food and agricultural products has increased from almost US\$500 billion in 2001 to over US\$1610 billion in 2019 (ITC, 2020). Figures 2, 3 and 4 show trends in the most traded crop commodities, animal products and processed food products³ since 2001. Growth in global trade in value has been fastest in products such as oilseeds, fruits (Figure 2), meat, fish (Figure 3) and oils and fats (Figure 4), rather than in staple grains, which nevertheless continue to dominate food trade in absolute volumes.⁴ These increases reflect demand from expanding populations, more diversified diets as incomes rise, and a shift in diets, particularly in many middle-income countries, towards animal and processed products. For example, growth in the trade of oilseeds has been driven primarily by demand for livestock feed, particularly from China, which currently receives around two thirds of global soybean imports. Oilseed crops are also used in many ultra-processed foods, global sales of which have increased dramatically since the early 2000s, particularly in low- and middle-income countries (LMICs) (Vandevijvere et al., 2019). Increased trade in sugar and sweetener products is also associated with a rapid growth in sales of sugar-sweetened beverages in many LMICs, most significantly in Latin America and the Caribbean and in South and South-East Asia. Demand for variety, convenience and year-round availability has been a driving factor after the rapid growth of global trade in fruits (with bananas, apples and oranges as the most traded products) and fruit and vegetable products (Huang and Calvin, 2012; Rabobank, 2018).

¹ Trade values in real terms mean international food commodity prices are deflated by the World Bank index of the trade unit value of manufactures (see FAO 2020). Note that while the long-term trend of international food prices since the early 1960s displays a declining trend, a rise in real prices is observed since the near historical low in 2000, suggesting a lower productivity growth in agriculture than in the wider economy, and implying that agricultural products have become relatively more expensive than non-agricultural goods.

² For instance, 15 per cent of the total world production of cereals and 10 per cent of meat is traded internationally. This is, however, much higher for vegetable oils (about 50 per cent) and sugar (some 30 per cent). Approximately 10 per cent of all (bovine, pig and poultry) meat production and 8 per cent of the world's milk production is traded internationally, the latter in the form of processed dairy products (OECD-FAO, 2019).

³ Here processed food products include dairy (HS04) and HS15-24 of the list of international trade codes of product descriptions. The products shown here exclude beverages, residues of the food industry used for feed and tobacco (HS22, 23 and 24 respectively.).

⁴ See Global Panel (2020: Figure 7), showing changes in global imports in kg/capita between 1993 and 2013 for different commodities.

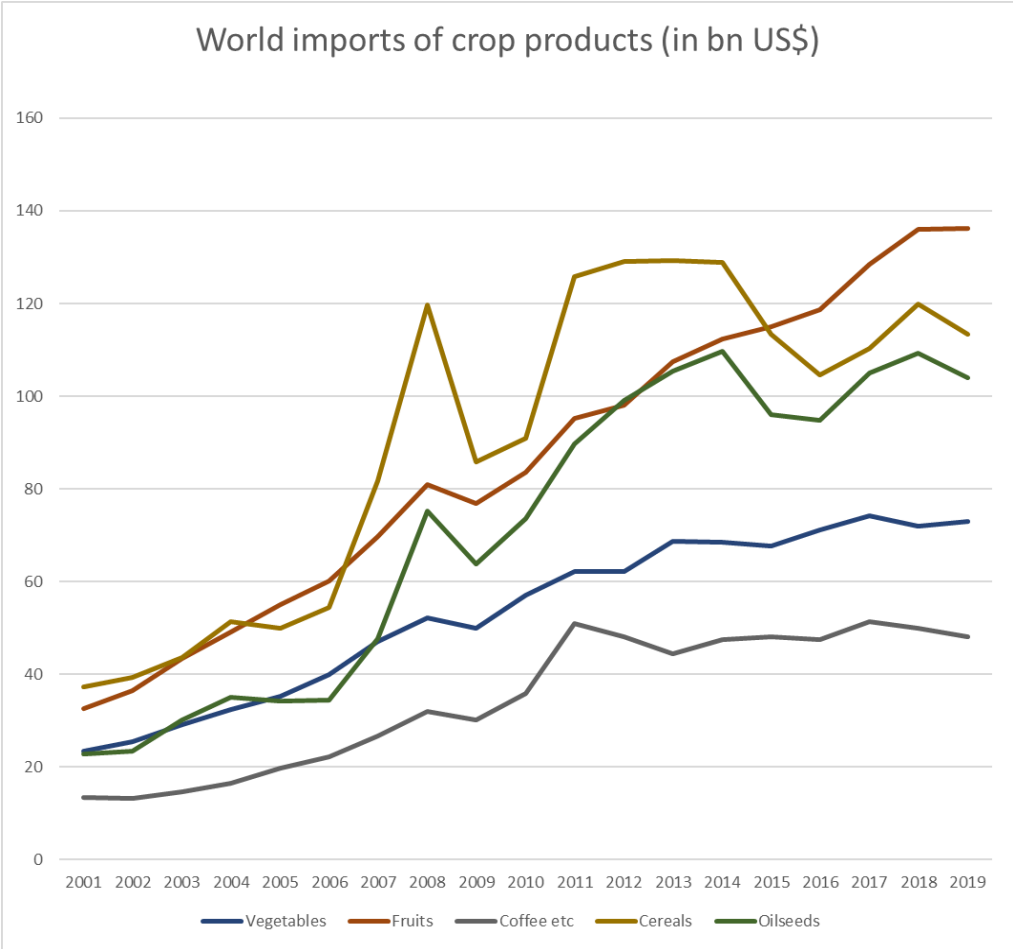


Figure 2: World imports of crop products, 2001-2019 (in US\$ billion). Source: UN Comtrade (undated)



Figure 3: World imports of animal products, 2001-2019 (in US\$ billion). Source: UN Comtrade (undated)

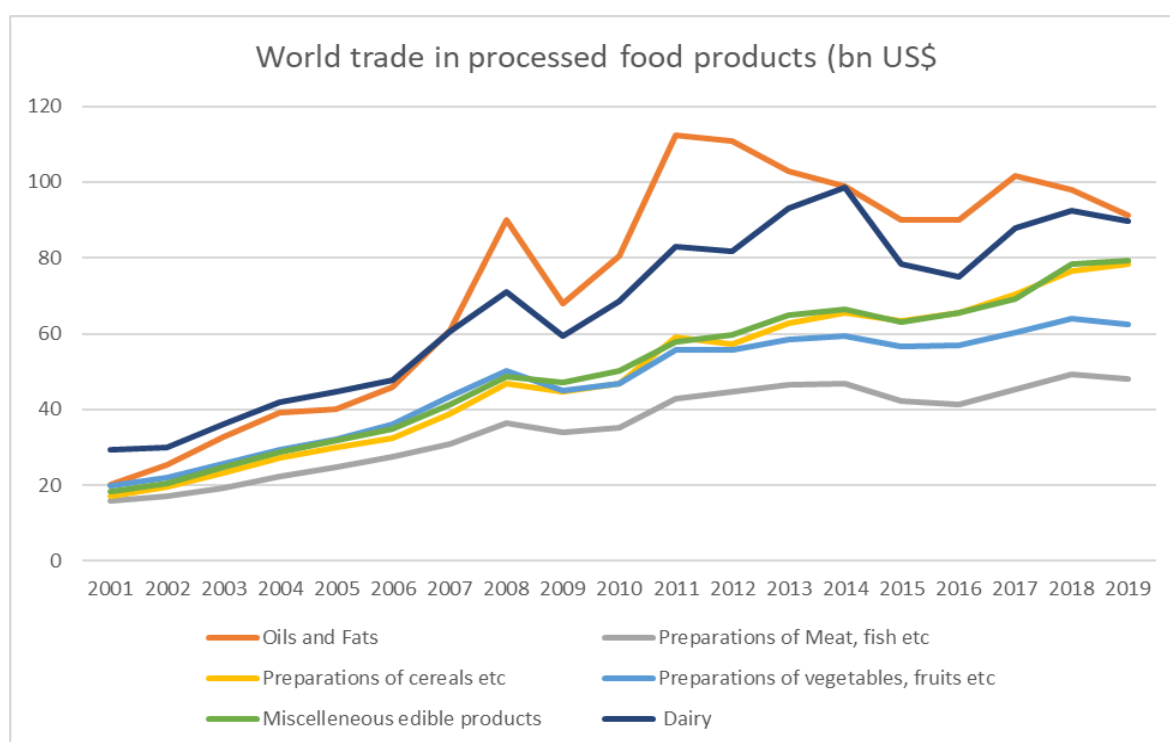


Figure 4: World imports of processed products, 2001-2019 (in US\$ billion). Source: UN Comtrade (undated)

Prices reflect the fundamental forces of supply and demand, and shape global trade. Since 2000, increasing prices of agricultural commodities, as well as the 2008 and 2011 price surges, were the result of structural changes in global agricultural markets. Strong demand for food and feed, declining stock-to-use ratios and expanding production in biofuels combined and gave rise to market shocks and price volatility.⁵ Since then, agricultural prices have declined, although they are still higher than in the period before 2007 (see Figure 5). Markets are also calmer and price volatility has declined significantly compared with the violent price episodes of 2008–2011 (FAO, 2018a).

⁵ In response to rising food prices in 2007/2008, some countries took protective policy measures designed to reduce the impact of rising world food commodity prices on their own consumers. For example, India and Vietnam banned the export of rice and Russia and Ukraine established quantitative restrictions on wheat exports. However, such measures typically forced greater adjustments and higher prices in global markets (Laborde et al., 2019).

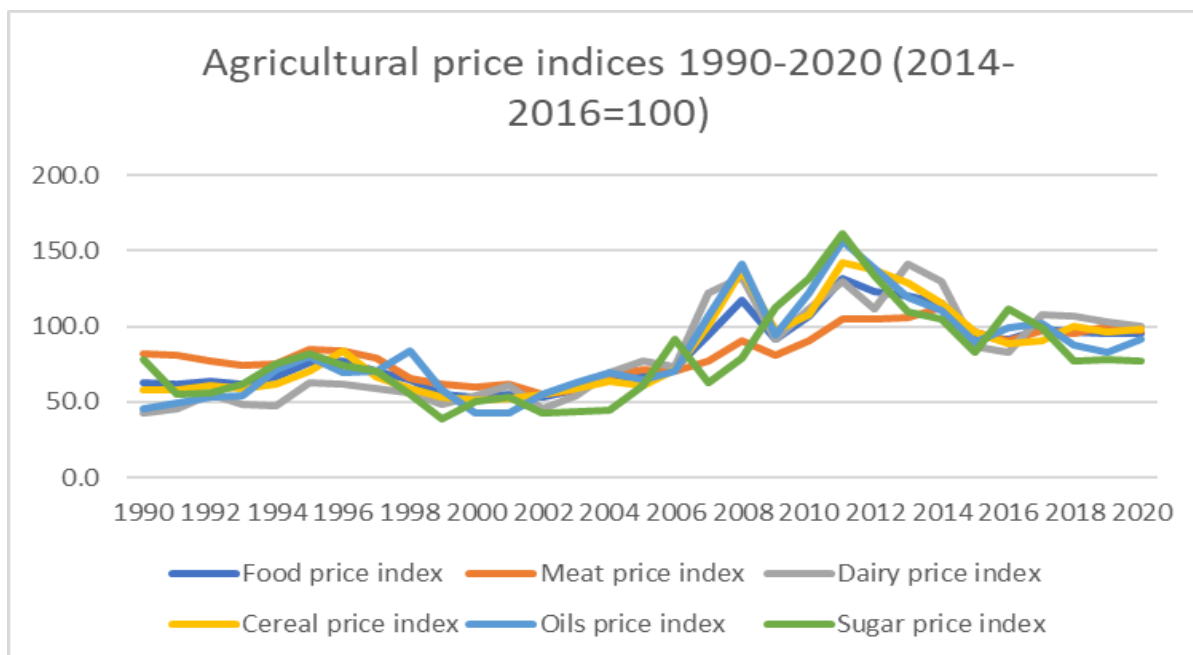


Figure 5: International price developments of agricultural commodities, 1990-2020 (indices, 2014-2016=100). Source: FAO, 2020.

Strong growth in trade in agri-food products has been supported by trade and investment liberalization policies and rapid economic growth in China and other emerging economies (e.g. OECD, 2019a). Falling tariffs and reductions in trade distorting producer support have added to the gains in market access that began with countries implementing their commitments under the General Agreement on Tariffs and Trade (GATT) Uruguay Round 1994 Agreement on Agriculture. In the last decades, applied average import tariff rates have declined further, largely because of a range of bilateral and regional trading agreements coming into force and unilateral actions by some countries⁶ (OECD, 2019a). This shift in protective trade policies has had an important impact on production and trade patterns in the last two decades, with an increasing relative importance of production centres towards emerging and developing regions (those of Asia and South America in particular) and, in contrast, modest production growth in the developed production regions of Europe and North America. Consequently, developing and emerging countries are rising in importance as major agri-food exporters and importers, particularly Brazil, China, India, Indonesia, the Russian Federation and South Africa. Between 2000 and 2016, the LMIC share of world agricultural exports increased from 29 to 39 per cent, while the share of world agricultural imports increased from 21 to 32 per cent. There has also been a change in the distribution of trade between countries, with an increase in trade between emerging and developing countries, which implies expanding South-South agricultural trade (OECD, 2019a; FAO, 2018a).

For the least developed countries (LDCs), agricultural imports have increased more than exports (see Figure 6). Agricultural imports of this group saw a huge increase from US\$ 8.7 billion in 2000 to around US\$50 billion in 2017-2019, accounting for 3.2 per cent of global agricultural imports (from 1.7 per cent in 2000). Exports show a weaker trend and, because of this, LDC trade deficit in agricultural products has risen to more than USD\$20 billion since 2011 with a provisional peak of US\$29 billion in 2017/18, dropping to US\$23 billion in 2019. The increase in food imports is due to rapid population growth rather than income growth. In most LDCs agricultural productivity growth did not keep pace with population growth, which is the reason why many countries in this group saw a rapidly increasing food import bill over the last two decades.

⁶ Examples of unilaterally determined non-reciprocal preferential trade schemes include the Caribbean Basin Initiative (CBI), promulgated by the United States in favour of 17 Central America and Caribbean countries and territories washed by the Caribbean Sea, and the EU's General System of Preference (GSP) applied to low and lower-middle-income countries (GSP standard and GSP+), and to the least developed countries (Everything But Arms, EBA).

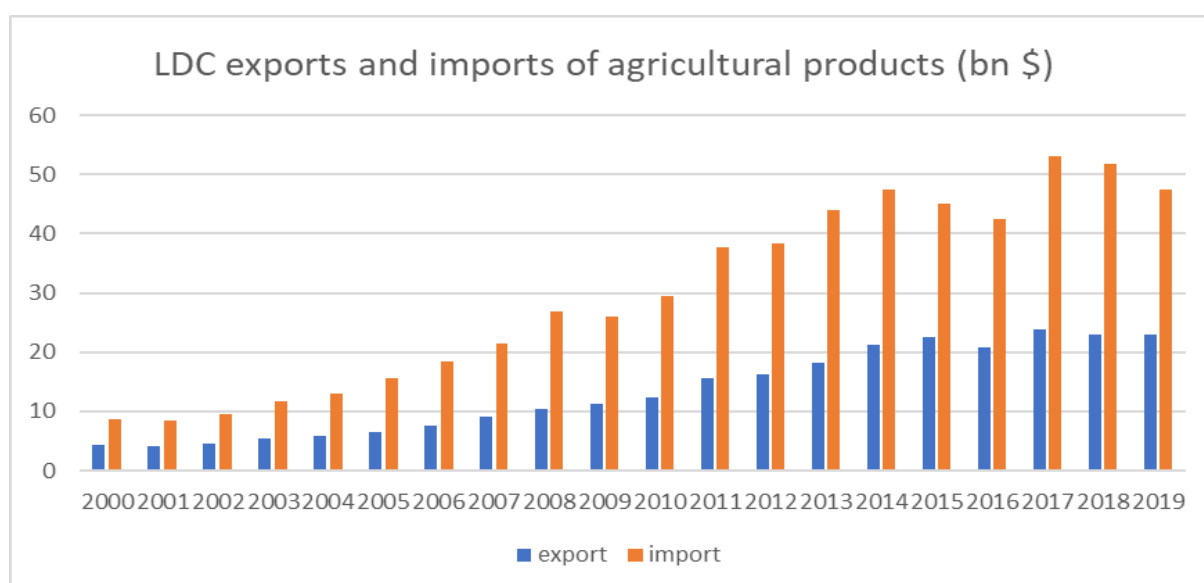


Figure 6: Least developed countries' (LDC) exports and imports of agricultural products, 2000-2019 (US\$ billion). Source: FAOSTAT (undated): crops and livestock products trade

3.2 Regional specializations and trade positions

Despite the indicated shifts, with emerging economies taking a greater share of the world's total agricultural exports, high-income countries still dominate global trade in many agricultural and food products, in particular Australia, Canada, European Union (EU), New Zealand and USA. Due to its highly integrated internal markets, the EU is involved in most international trade in food products, with 28 per cent of world trade taking place entirely within its borders. Considering only extra-regional trade, the EU provides 10 per cent of global exports and 10 per cent of global imports, which results in a regional neutral trade balance (Eurostat, 2018). Europe produces a large share of the world's primary animal products, including meat and dairy products. The EU's agri-food imports from third countries are mainly raw materials such as oilseeds, fodder crops, (tropical) fruits, coffee, tea, palm oil and fish for further processing, whereas a significant part of its exports are high value added and processed products (e.g. beverages, cereal products, dairy, meat and food ingredients).

North America (Canada and USA) and Latin America are net exporting regions of agricultural and food products. North America's major export products are cereals (wheat and maize), oilseeds, meat and horticultural products (tomatoes, grapes, oranges). About two thirds of imports are horticultural (fruits, vegetables, nursery stock and cut flowers) and tropical products such as coffee, cocoa and rubber. Latin America is an important net exporter of fruit (bananas, apples, mangos) and grains, oilseeds, sugar and animal protein (poultry and beef). Yet, with the exception of Argentina and Brazil, all other Latin American and the Caribbean countries are net importers of cereals, often sourced from within the region.

South-East Asia has a group of rapidly growing economies with a diverse export and import portfolio, with major global exporters of rice (Thailand, Vietnam), vegetables (Thailand, Vietnam), palm oil (Indonesia, Malaysia), coffee (Vietnam), poultry (Thailand) and fish (Vietnam). The region also imports large amounts of feed and fodder. China is a massive net importer of food, in particular protein (meat, dairy, soybean) and vegetable oils, whereas India, the world's second most populous country, is a net exporter of food with rice, fish and beef as main export products, and a significant importer of vegetable oils (palm, soya and sunflower oil). LMICs in the Caribbean, Middle East, North Africa and sub-Saharan Africa are generally food import dependent. The main imported food categories are cereals and vegetable oils, while nuts (North Africa), fruits and tropical products like cocoa and coffee are important export products.

Even though international food trade trends suggest market globalization, different studies emphasize the significance of *regionalization* of food trade as well as shifting geographies of production (e.g. Metabolic and

WWF, 2017). Referring to the regions defined by IFAD's operational policy (IFAD, undated), Table 1 illustrates the regionalization of trade, showing the following:

- High-income countries (HIC) are the dominant exporters and importers of agri-food products in the world. HIC mainly trade among themselves: inter-regional trade accounts for 75 per cent of total exports.
- Total exports and imports in East and Southern Africa, and West and Central Africa are modest, yet with major export and import flows to HICs and among themselves. These numbers suggest that African countries are little integrated into global markets.
- Countries in Asia and the Pacific, and the Near East, North Africa, Europe and Central Asia are trading mainly within their own region and, in the case of intra-regional trade, rely greatly on trade connections with HICs (both imports and exports).
- Latin America and the Caribbean is the only region with a significant export surplus, with Asia and HICs as the main export destinations.
- Asia and the Pacific; HIC; the Near East, North Africa, Europe and Central Asia; and West and Central Africa are net importing regions, while the food imports and exports of East and Southern Africa are in balance.

Table 1

Regional exports and imports of food products (2018) in US\$ billion

<i>Exporting\Importing</i>	<i>ASPA</i>	<i>ESAF</i>	<i>HIC</i>	<i>LACB</i>	<i>NNEC</i>	<i>WCAF</i>	<i>NA</i>	<i>Total export</i>
ASPA	80	5	109	3	12	7	4	220
ESAF	2	8	11	0	1	1	0	23
HIC	106	6	714	49	57	10	14	956
LACB	56	1	95	20	16	2	1	191
NNEC	13	2	38	1	41	2	1	98
WCAF	2	0	3	0	0	1	0	6
NA	2	0	3	0	0	0	0	5
Total	261	22	973	73	127	23	20	1499
Share of region in total World imports	17	2	65	5	8	2	1	

Source: UN Comtrade (undated). Rows show the exports of the region; columns show the imports of the region. ASPA = Asia and the Pacific; ESAF = East and Southern Africa; HIC = High income countries; LACB = Latin America and the Caribbean; NNEC = Near East, North Africa, Europe and Central Asia; WCAF = West and Central Africa; NA = not available/unknown.

3.3 Food import dependency and food security

The above regional overview of agrifood trade relations hides country-specific situations in net trade positions and food import dependencies and their dynamics. Figure 7 shows that for a number of countries in sub-Saharan Africa, increasing imports have led to a higher import dependency over the last three decades.⁷ For many products, the figures show imports account for high shares of domestic consumption. This, in particular in the case of sugars, is vegetable oils and fish (>50 per cent in most selected countries).⁸ Much of the dairy consumption in Cote d'Ivoire, Ghana and Nigeria used to be imported, but shares have declined in both Cote d'Ivoire and Nigeria. Import dependency of meat consumption is low across the countries selected, yet when further detailed, it appears that 30 per cent of sub-Saharan Africa overall consumption of poultry meat is imported (Van Berkum et al. 2017, not shown in Figure 7). Although the diet in most African countries largely consists of cereals, roots, tubers and plantains, intakes of (poultry) meat, fish, and fruits and vegetables are on the rise (Tchamda and Bricas, 2015; Me-Nsope and Statz, 2017).

⁷ In composing this figure, import volumes of separate food items are transferred from kilogrammes into kilocalories and related to Food and Agriculture Organization of the United Nations (FAO) food availability data from the Food Balance Sheets statistics. Food import dependency is defined as the share of imports in food availability of a country. See <https://www.fao.org/faostat/en/#data/FBS>

⁸ For some products (e.g. sugars in Ghana and Nigeria), percentages are above 100, which means that production (and stocks) are very low and the country mainly imports this product, yet there are some exports that bring domestic supply available below the level of imports.

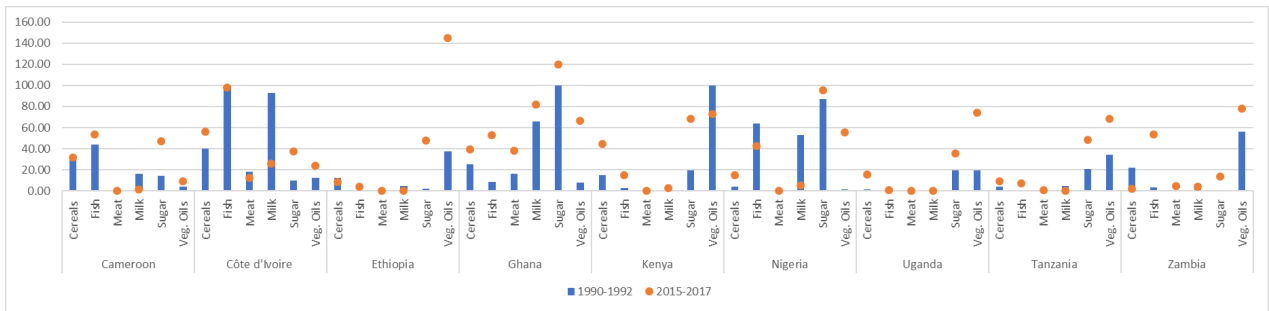


Figure 7: Share of imports in domestic food supply (in kcal/capita/day) in selected sub-Saharan African countries. Source: FAO Food Balance Sheets (FBS), <https://www.fao.org/faostat/en/#data/FBS>. Note: FBS import in tonnes is converted to kcal/capita/day based on the ratio between FBS food supply in tonnes and FBS food supply in kcal/capita/day (author's own calculation).

High import dependency creates risks for food security because of fluctuations in supply and price on the international market, which may result from harvest failures and/or policy changes. This means that the stability of food access and availability remains a challenge, especially in regions and countries that rely heavily on food imports and are characterized by low domestic food availability. Chances of supply disruption are further increased if the importing country is dependent on one or two suppliers. This is often the case in the trade of commodities like wheat, rice, palm oil and soybean (products), where the concentration of exporters is high (ITC, 2020; OECD/FAO, 2019; see also Kummur et al. 2020). This indicates that due to increased global trade in food supplies, diversity increases for a large proportion of the world population, with the exception of major exporting countries where it decreased. However, the increase came at the cost of increased trade dependency, potentially exposing many of the importing countries to shocks in the few major exporting countries.

Figure 8 indicates that food security risks related to import dependency are especially relevant for countries in North Africa and the Near East, in many African countries and the Caribbean, and in several Latin American countries. Also, population-rich countries in East Asia (such as China, Indonesia and the Philippines) depend significantly on food imports. Annex 1 shows import shares of main food categories for a number of the Latin American and East Asian net importers of food (similar to Figure 7).

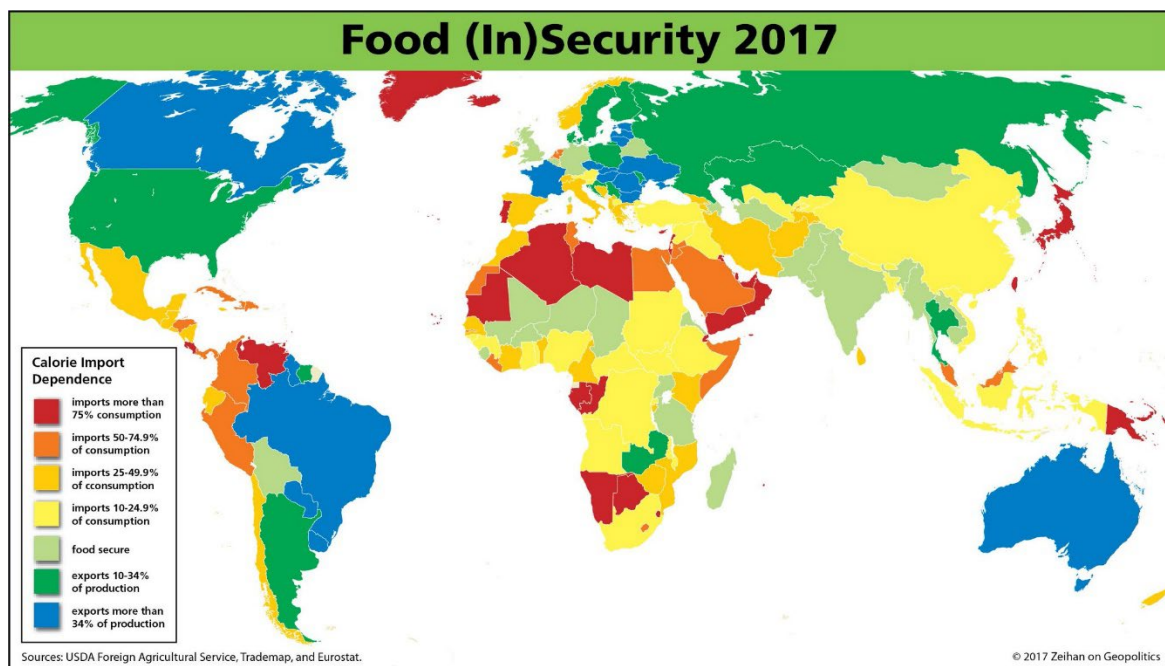


Figure 8: Global map of food security (2017). Source: Mapmania https://www.mapmania.org/map/91850/world_map_of_which_countries_import_export_on_net_food; based on data from USDA FAS, Trademap, and Eurostat

Importing food to balance domestic production and use should not be a problem so long as a country is able to generate a positive balance of payments to purchase foods from the international market. China, for example, has a vast negative agri-food trade balance and net imports of foods are growing. However, China's burgeoning demand for food imports goes hand in hand with its strong economic growth and export performance, as it finances its food imports predominantly from such non-food exports as machinery and electrical equipment.

Many LMICs are net food importers and depend on only one or two export products to generate sufficient revenue to pay their food import bill. To illustrate this dependence, Table 2 lists a number of LMICs with a long tradition of import dependence on foods. The amount of food imports per capita differs substantially across the countries, depending on the type of products imported (staple commodities or processed foods) and the domestic shortage of supply that has to be balanced by imports. It is important to note how the food import bill is financed. A number of countries show a high ratio of food imports over total merchandise exports, indicating that a high percentage of foreign exchange generated with exports is spent on food imports. This holds true for Benin, Burundi, Egypt, Ethiopia and Jamaica, with Benin's food import values even exceeding the country's total export revenues in recent years. In addition to those already mentioned, some countries have a food import bill that is higher than their agricultural export revenues, indicating the low competitive strength of their agricultural sectors. This is the case for Bangladesh, Congo, Mozambique, Nigeria, Pakistan and the Philippines. All the countries in this list appear to be dependent on only one or two sectors for their export revenues; several countries depend on fossil oil and/or natural gas exploitation for export revenues while others produce cash crops like cotton, coffee or cocoa as their main export.

Table 2
Food import dependency for selected low and middle-income countries

	<i>Food imports as % of total agricultural exports</i>	<i>Food imports as % of total merchandise exports</i>	<i>Major export product</i>
Angola (LM)	17	7	Mineral fuels
Bangladesh (LM)	707	30	Apparel
Benin (L)	583	174	Cotton
Bolivia (LM)	49	8	Mineral fuels
Burundi (L)	124	77	Pearls
Democratic Republic of Congo (LM)	2206	7	Mineral fuels
Cote d'Ivoire (M)	28	16	Cocoa
Egypt (LM)	287	48	Mineral fuels
Ethiopia (L)	149	93	Coffee
Guatemala (M)	43	21	Coffee, fruit, apparel
Jamaica (M)	260	64	Inorganic chemicals
Kenya (LM)	68	39	Coffee
Mozambique (L)	149	19	Mineral fuels
Niger (L)	93	20	Ores
Nigeria (LM)	522	11	Mineral fuels
Pakistan (L)	123	26	Apparel, cotton
Philippines (LM)	166	15	Electronics
Zambia (LM)	87	5	Copper

Sources: UN Comtrade (undated); UN Population database. Ratios calculated on the basis of three-year averages, mainly on 2016-2018. Note: L = low-income country (annual income per capita < US\$1,025); LM = low-middle-income country (\$1,026-\$3,995); M = middle-income country (\$3,996-\$12,375).

Exports of minerals and cash crops like cocoa and coffee are an important source of income to many countries in Africa, Latin America and the Middle East. Import dependency on food appears to correlate with export dependency on other primary commodities. FAO (2020) shows that 80 per cent of all countries that have experienced a rise in hunger during economic slowdowns or downturns in recent years have economies that are highly dependent on primary commodities for export and/or import. Based on a sample of 129 LMICs during 1995-2017, the report finds that high levels of export and import dependence on primary commodities have a statistically significant and negative effect on food security. This is because of the direct effects of falling commodity prices, which are the deterioration of the terms of trade (that is, the ratio of the export to import prices) that leads to a deterioration of the balance of payments and currency

devaluation.⁹ The latter translates into indirect economic impacts like increasing domestic prices, rising unemployment, lower wages and reduced government revenues (FAO, 2020: 44-47). Evidence from several African countries shows that past commodity price shocks had serious impacts on food security as household purchasing power fell because of price increases, income falls or job losses resulting from currency devaluation and cuts in public sector spending.¹⁰ Regarding the latter, figures show public revenues of African commodity-dependent countries shrank from an average of 26 percent of gross domestic product (GDP) during 2004-2007 to 21 percent of GDP in 2011-2014 (FAO, 2019: 70), leaving fewer resources for social protection, health services and other economic growth supporting investments.

Another example is North Africa and the Middle East, the region with the highest import dependency for its food supply and one that is particularly dependent on international trade for staple foods such as cereals, sugar, sweeteners and vegetable oils (FAO, 2018b). This region is characterized by high population growth and a low availability of cultivable land and water. It is economically highly dependent on the international prices of fossil fuels, which have fallen sharply since 2013. The growing wheat import dependence is of particular concern in the region, where consumer food subsidies are a widely used policy instrument to combat price fluctuations and keep food affordable (FAO, 2018b; Le Mouél and Schmitt, 2018).

In cases where food security is threatened by a deterioration in the terms of trade of an export product on which the country is highly dependent for its export revenues, the major policy implication is to promote diversification of the economy into productive sectors (in both the agricultural and non-agricultural sectors) to achieve a structural transformation that is pro-poor and inclusive. Diversification should also lead to an increased share of value addition in products and increasing export opportunities. Greater export diversification will strengthen countries' resilience in terms of trade shocks. Based on an extensive analysis of export diversification options in Chad, Guinea, Mali and Niger, López-Cálix (2020) identifies several key elements of an export diversification strategy, such as targeted investments in trade infrastructure (to increase efficient trade logistics), human capital (to build skills and enhance people's productivity and employability) and government interventions that target specific institutional deficiencies such as the lack of information and knowledge of overseas market standards.

4. Enhancing competitiveness to benefit from trade: obstacles and options for improvement in sub-Saharan Africa

As agriculture employs 65-70 per cent of Africa's labour force and typically accounts for 30-40 per cent of GDP, it is clear that agricultural development and growth is the key to achieving a transformation towards better livelihoods in both agricultural and non-agricultural activities. Moreover, growing urban food markets in most African countries increase demand and offer regional market opportunities, especially for high-value products.

Currently, Africa's agricultural potential is highly underutilized. Africa has large tracts of unexploited land resources that are suitable for agricultural production (non-protected, non-forested land, with low population density (World Bank, 2013). While some large areas of the continent are arid or semi-arid, water resources

⁹ The evolution of food and other commodity prices over the last 25 years (1995-2019) is characterized by high price volatility (UNCTAD, 2019). Mineral and fuel prices have gone up faster than food prices, while prices of food, tropical beverages (cocoa, coffee and tea) and agricultural raw materials (e.g. cotton, rubber, tobacco) show similar trends, hence not altering the price ratio of the latter two product groups with food over this whole period. However, the varying levels of volatility among the food products and commodities affect the burden of the food import bill of food deficit countries, in combination with the narrow range of commodities (and their respective price developments) these countries' export revenues depend on.

¹⁰ A currency devaluation means that food imports become more expensive, which in the short term may cause inflation. However, the fall in the value of the domestic currency also implies that exports become cheaper for foreign customers, potentially increasing demand for exports. How exports will respond to such devaluations determines the final impact on the ratio of food imports to total exports (see Table 2). This will depend, presumably, on the ability of its manufacturing and services sectors (e.g. tourism) to respond to the devaluation. In short, more than merely the ratio of food imports to total exports, the response of this ratio to economic growth has far-reaching consequences.

are, on average, greatly underutilized.¹¹ Moreover, relative to other regions, Africa has low labour costs, which should encourage the production of labour-intensive farming and its related products and services. However, the African agricultural sector is not very competitive. Instead, it is characterized by low land and labour productivity and by limited value addition to the agricultural commodities it produces (OECD/FAO, 2016; Benin, 2016). Overall, the sector is characterized by a high percentage of smallholders cultivating low-yielding staple food crops on small plots with minimal input use (e.g. Van Ittersum et al., 2016).¹² Due to unfavourable natural conditions, poor human capacity and weak institutional capacities to benefit from technological improvements, production growth has fallen behind population growth, leading to increased reliance on international markets for sufficient food supply (Mbabazi Moyo et al., 2015; OECD/FAO, 2016). The region also faces the largest interannual variability in precipitation and climate change is already affecting the onset and volumes of precipitation. Combined with civil strife and unrest in various parts of the region, the number of undernourished people in sub-Saharan Africa is increasing.

Like many other reports discussing how to better exploit Africa's agricultural potential, Mbabazi Moyo et al. (2015) point to the need for increased investments in infrastructure (including irrigation) and improved access for small-scale farmers to inputs. Explaining the missed green revolution in Africa in the 1960s, of which East and South Asia benefitted most, the authors argue that in order to foster the sector's competitiveness it is essential to address the development of high-yielding crops that are suited to African soil and ecological systems, such as recent successes shown with cassava, beans, maize and rice. Moreover, infrastructure deficits have constrained the availability and access to productivity enhancing inputs as well as the commercialization of agricultural production in Africa and should be remedied.

To further exploit Africa's agricultural and food producing potentials, policy and institutional factors should be supportive to agricultural development. African governments have taken several important policy initiatives to boost agricultural sector development over recent years, such as the Comprehensive African Agricultural Development Programme (CAADP). This and related initiatives have their origin in the Maputo Declaration of 2003 and the Malabo declaration of 2014 on accelerated agricultural growth, in which African Union member states committed themselves to allocate at least 10 per cent of national budgetary expenditure towards agriculture and aimed to achieve a 6 per cent annual growth in the agricultural sector. While less than 20 per cent of countries have achieved their commitments on agricultural spending, Pernechele et al. (2018) note an overall decreasing trend in the share of public resources channelled to agriculture in 14 sub-Saharan African countries¹³. Moreover, some of these expenditures may have targeted primarily short-term objectives that may not have been fully aligned with long-term development goals for the sector. For instance, funds were used for inputs (fertilizers), subsidies and maintaining public food stocks, measures for which implementation costs, as well as the price distorting impacts of such policies, are important considerations. Additionally, governments used temporary trade policies such as export bans, market price support or import tariff reductions to support consumers, often implemented in a discretionary manner and working against the stabilization of food markets (OECD/FAO, 2016; Pernechele et al., 2018). Box 1 provides further details on domestic price policies in the 14 sub-Saharan African countries included in Pernechele et al. (2018).

The strategic development of the agricultural sector would benefit from an increased policy focus on infrastructure, research and development, the latter to boost the process of technology adoption, which is particularly poor in Africa (OECD/FAO, 2016; ASTI, 2016). One reason is the high costs associated with technology transfer and adoption; animal vaccines or improved seeds are still considered luxuries for many

¹¹ Only 2 to 3 per cent of renewable water resources in Africa are being used, compared to 5 per cent worldwide (World Bank, 2013). Xie et al. (2018) claim that across the region's dryland areas, up to 14 million hectares could be sustainably and profitably converted into irrigated areas, with the potential effect that the region's net imports of cereals would decline by as much as two thirds or 90 million tonnes from a baseline net import volume of 133 million tonnes in 2050.

¹² From 1991 onwards, sub-Saharan Africa continued to have a low agricultural productivity compared with the rest of the world, with 2015-2017 cereal yields averaging 1.5 tonnes per hectare, compared with 7.2 tonnes in North America, 4.8 tonnes in South America and 4.1 tonnes across Asia (Van Ittersum et al., 2016). Due to demographic trends, the fragmentation of the farm sector can be expected to worsen in the medium to long term. Fragmentation of farms below a certain size in turn further complicates the adoption of technologies and the design of efficient and effective agricultural development programmes. See Giller, et al., 2020).

¹³ These countries are Benin, Burkina Faso, Burundi, Ethiopia, Ghana, Kenya, Malawi, Mali, Mozambique, Nigeria, Rwanda, Senegal, Tanzania and Uganda.

small-scale farmers in Africa. Another common obstacle to technology transfer and adoption in Africa is the lack of human capital and investment in agricultural research and extension (ASTI, 2016). The slow pace of technology adoption results in low levels of productivity and is also reflected in largely extensive types of farming systems (especially for food crops and livestock) and high seasonality in agricultural production.

Productivity growth generally lowers real farm prices (as production expands), benefitting consumers but putting direct pressure on the incomes of farmers. To benefit from productivity growth, farmers need to have opportunities to scale up their businesses, for instance by buying land or investing in mechanization. The proper functioning of institutions such as a land, labour and credit market (among others) is then the key to taking advantage of adopting productivity increasing technologies at the farm level. Moreover, sector development needs private sector investment in both upstream and downstream industries to enhance efficiencies in the supply chain. Reardon et al. (2019) point out that the affordability and profitability of new farm technologies depend on concomitant innovations in the supply chain to supply inputs for or market the output of the innovation. They advocate public-private partnerships to encourage innovation and productivity growth along all segments of the food system.

Box 1: Effects of trade and market policies in sub-Saharan African countries

Pernechele et al. (2018) show that over the period 2005-2016, in aggregate, overall price incentives to agriculture were increasing in the 14 sub-Saharan African countries for which trade and market policies are reviewed. The nominal rate of protection – the relevant indicator measuring the gap between world and domestic prices – of agricultural products converted from negative to zero and even became positive after 2011. Policies focused on supporting domestic production, such as import tariffs and price support, are identified as main drivers of this trend, following the food price crisis period (2007-2011) when policymakers were mainly concerned about consumer protection. This result is primarily driven by the favourable policy environment for food security crops (e.g. maize, rice, cassava and sorghum), whereas cash crops (e.g. tea, cotton, cocoa) targeting international markets are generally being discouraged on the price incentives side. Several African regional trading communities, such as the Economic Community of West African States (ECOWAS), have corroborated national measures in providing price support to agricultural producers by means of a relatively high common external tariff. Despite the increased price support to farmers, positive effects on production growth and smallholders' market participation are reduced due to large market inefficiencies faced by farmers in some value chains. Market inefficiencies include prohibitive transportation costs, lack of post-harvest support, unbalanced market power in the supply chain and illicit taxes, creating market access costs and pushing downward on farmers' prices. On the other hand, market inefficiencies also constrain price transmissions from international to domestic markets, for instance as poor infrastructure from the border to the wholesale level offer some degree of protection to local producers making imported goods more expensive. Generally, limited price transmission (whether within a country among regional markets or cross-border trade) contributes to high volatility of price incentives and disincentives.

5. Governance of international trade

Government strategies supporting agricultural productivity and efficiency in the supply chain will enhance the sector's position to withstand import competition, which helps low-income countries to reduce their food import dependency. Moreover, diversifying the sector's supply, for instance by producing products with higher value, is also an important pathway for using export opportunities that can act as a flywheel for income growth and jobs. Access to international markets has altered significantly in recent years due to changes in agricultural support policies in many developed countries and the emergence of global value chains. The latter is driven by the development of standards and grades, innovation in the agri-food sector and improvements in trade logistics (OECD, 2020). This chapter discusses the implications of these developments for opportunities for LMICs to benefit from trade.

5.1 Changing role of agricultural support policies on international market prices

For a long time, international prices for agricultural products have been heavily affected by government policies. Developed countries have traditionally supported their agricultural sector and protected their local producers from import competition (Anderson, 2008). This situation made agricultural production more attractive for domestic farmers and resulted in the overproduction of farm products in high-income countries, in particular for cereals (wheat), sugar, dairy and beef. Further subsidized output on world markets depressed global food prices, putting high pressure on producers of developing countries by reducing their access to international markets. This led to weaker terms of trade for those developing countries that specialized in agriculture, increased competition with foreign supply at domestic markets and added to international price volatility.¹⁴ These trends have changed since countries began to implement their commitments under the Uruguay Round 1994 Agreement on Agriculture, followed by further reduction of agri-food tariffs largely because of a range of bilateral and regional trading agreements coming into force and unilateral actions by some countries. In general, developed countries have reduced the trade impact of their portfolio of agricultural policies by reducing and restructuring the way they provide support to their producers. For example, a number of Organisation for Economic Co-operation and Development countries have reduced their use of market price support, which is considered one of the most production and trade distorting forms of support (OECD, 2019a). For the EU, for instance, reforms in agricultural policies from price to direct income support brought domestic price levels much closer to those at the international prices (EU, 2018). Other developed countries that are major players at international markets (as exporter and/or importer of food products) reduced import tariffs and (direct) price support to their domestic farmers, resulting in lower nominal protection rates for most of these countries (Table 3). As a consequence of the Agreement on Agriculture, price has gained in importance as a competitive edge on international agricultural commodity markets in the last two decades.

Table 3
Nominal protection rates of selected countries

<i>Countries</i>	<i>Average 2000-2004</i>	<i>Average 2015-2019</i>
EU	1.22	1.04
USA	1.08	1.03
Australia	1.00	1.00
Canada	1.10	1.05
Japan	1.95	1.56
Argentina	0.87	0.80
Brazil	1.04	1.00
China	1.00	1.13
India	0.85	0.90
Philippines	1.24	1.38
South Africa	1.09	1.04

Source: OECD, Producer and Consumer Support database, data retrieved on 11 November 2020). Note: Producer protection, measured by the Producer Nominal Protection Coefficient (NPC) is defined as the ratio between the average price received by producers (measured at the farm gate), including net payments per unit of current output, and the border price (measured at the farm gate). For instance, an NPC of 1.10 suggests that farmers received prices that were 10 per cent above international market levels.

At the same time, as traditional trade barriers like import tariffs are lowered, trade in agri-food products is more likely to be affected by non-tariff measures (NTMs) arising from domestic regulations that affect international trade. Domestic measures affecting trade include sanitary and phytosanitary (SPS) requirements, technical barriers to trade (product rules on packaging and labelling) and customs procedures, local content requirements, and trade requirements such as pre-shipment inspections. NTMs are usually in place to achieve legitimate regulatory goals, such as the health and well-being of consumers and the protection of the environment, but generally imply trade costs as regulations differ among countries

¹⁴ This is due to the relative thinness of international markets – for most agricultural commodities only a small percentage of production is traded internationally, implying that a small reduction in supply or demand has relatively strong price effects. See also footnote 2 of this paper.

(OECD, 2019a). Niu et al (2018) and Cadot et al. (2018) show that the price effects of NTMs can be significant for agri-food products, with the price effects for food products higher than for agriculture. The cost-raising effects of such measures also disproportionately affect smaller producers seeking to access export markets as they may not have the resources to comply with SPS requirements (Cadot et al., 2018; OECD, 2019a).

NTMs have a profound impact on global trade structures and the participation of countries therein. Two examples show how EU policies where the precautionary motive has resulted in a sharp rise in the number of SPS measures on agricultural products (Figure 9) have impacts on exports from Africa. Using product relatedness measures, Idsardi and Viviers (2018) studied the diversification patterns of exports from Cameroon, the Democratic Republic of the Congo, Kenya and South Africa. Their findings indicate that while the regulatory framework of the EU is important, supply capacity and overall trade costs represent the main constraints for African exports and export diversification. Kareem and Rau (2018) estimate the impact of SPS measures of the EU on African exports of fruits and vegetables. Their results suggest that the SPS regulations act as a barrier to entry by limiting new entrants to markets while having limited effects on established trade flows. These conclusions are in line with the literature that finds despite the EU's tariff protection, entry has become very low for imports originating from developing countries (for instance, under the EU Everything But Arms initiative, the 50 poorest countries can access the EU market without duties and quotas). These countries are constrained in their exports to the EU by their inability to comply with product and process regulations, such as social, environmental and food safety (hygiene) standards (e.g. Bureau and Swinnen, 2018; Kornher and Von Braun, 2020). In its series of surveys in 23 developing countries, the International Trade Centre documented the impacts of non-tariff measures on trade opportunities, where it was found that for agricultural products, developed countries are perceived as comparatively more NTM-restrictive than other markets (ITC, 2015). The ITC survey analysis highlights that export companies in the agri-food sector are impacted in particular by SPS regulations, especially for certification or quality control. Overall, the results indicate the need for more effective domestic institutions among African exporters to meet compliance with the SPS measures and other product and process standards of the EU and other developed countries.

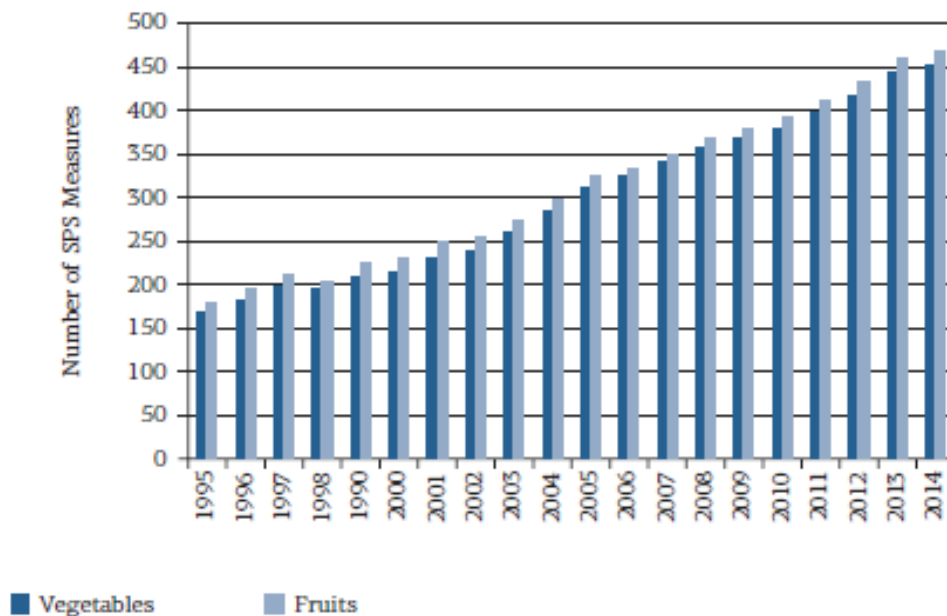


Figure 9: Number of SPS measures imposed by the EU, 1995-2014. Source: Kareem and Rau (2018)

5.2 Increasing concentration of upstream and downstream industries and the globalization of activities

With the declining impact of government policy in most developed countries on international price formation, international agricultural commodity prices are increasingly reflected by supply and demand factors. The

market structures (many/few suppliers/buyers), and with them the degree of competition, have strong implications for the formation of prices and the distribution of rents along the value chain. In this context, two related developments are important: an increasing concentration of upstream and downstream industries and the globalization of activities.

Around the globe, the typical food supply chain features many farmers and consumers at either ends of the chain, with relatively few agri-business companies and traders in the middle. Over the last decades, market concentration in the agri-food sector has developed at an astonishing speed due to the liberalization of agricultural and financial markets that started in the 1980s, and the “rolling back” of the state that followed. The private sector – food processors, retailers and input suppliers such as seed companies – now dominates some aspects of governance arrangements in many food systems. The central role of private actors is enhanced by a process of consolidation of the input and processing industry, as well as with supermarket strategies (see Box 2 illustrating the level of concentration in parts of the agri-food value chain).

Box 2: Worldwide market shares of the largest companies

Figure 10 illustrates the current concentrated food market structure. Four transnational companies have an estimated two thirds of the global market share in seeds. Three of them have the biggest stake in the globally operating chemical inputs (pesticides) industry, in which the top five control 70 per cent of the global market. The largest five farm machinery companies account for over 40 per cent of global sales, whereas the top four grain traders are responsible for 90 per cent. Likewise, the top 10 food and beverage companies account for almost 40 per cent of global turnover in their category. Equally, the trade and processing of cocoa, coffee and tea is controlled by only a small number of companies, like international trade in (and commercial production of) bananas (UNCTAD, 2019). Retail markets are also largely in the hands of a few large multinational operating companies. Examples presented in Figure 10 are for the German and USA markets, as representatives of high-income countries where a relatively small number of retailers has a dominant position. Food retail in LMICs is much more fragmented, with most people buying food at street and wet markets, in small groceries and locally operating supermarkets. Nevertheless, in the low-income countries, supermarkets gain an increasing share in food retail sales (Reardon and Timmer, 2012; Dais Nair, 2018).

Worldwide market shares of the largest companies



Figure 10: Worldwide market shares of the largest companies. Source: adapted from IPES Food (2017) and Mooney (2018). F&B = food and beverage

There are certainly benefits for large-scale operating companies, associated with scale economies, specialization and efficiency, especially if these benefits are passed on to market participants along the value chain and consumers could be offered a wider range of food products for lower prices. Large companies could also enhance control over quality and safety due to chain management, at least in principle. However, market concentration raises serious questions over the balance of power in the food system (De Schutter, 2010; Bellmann et al., 2019; Mooney, 2018; Howard, 2016). Concentration at retail and/or processor levels could squeeze farm income by paying low prices and reducing farmer autonomy as farmers may have few options other than to go through these buyers if they seek access to markets for their products. In addition, high-yielding seeds of the world's major crops are in the hands of a few companies and the growing market concentration in the global seed, biotech and crop protection chemicals industry could force farmers to purchase a package of products and services on conditions the provider can set unilaterally. The concern is that the ongoing consolidation will have negative impacts on the position of farmers and middlemen in the food chain. With its main focus on (short-term) economic gains, this consolidation is against the public interest in terms of fair(er) competition, more equitable distribution of wealth and the redirection of food systems to a path of greater sustainability (Bellmann et al., 2019).

There is, however, little empirical evidence that market concentration among traders and processors leads to market power that is abused, in the sense that processors and/or retailers and traders are reducing farm prices below the level that equalizes supply and demand (see OECD, 2019b for references).¹⁵ However, there may be specific situations and markets where such problems exist, for instance in remote regions that lack physical infrastructure to connect farmers to markets, or in markets for highly perishable and high-quality commodities where a few large downstream processors control demand. Existing analyses of the degree of competition in agricultural markets and how this would affect smallholders in developing countries do not provide a clear indication of the extent to which market power is exercised in large internationally concentrated markets (see for instance Treurniet, 2020).¹⁶ This calls for more empirical studies testing whether processors or exporters pay competitive prices in developing countries (see also Sexton and Xia, 2018). The main reason for low farm prices is likely to be that the supply is inelastic over the short term and that agricultural products are produced by many farmers. As a result, individual farmers are price takers with little or no bargaining power vis-a-vis local buyers, traders and processors, unless they are organized into producer associations, organizations or cooperatives. Yet, with more open markets – driven by trade liberalization and the globalization of activities of upstream and downstream industries – local farmers face more competition from elsewhere, which can create more price pressures than would be the case in markets that would be somewhat protected or isolated from international market developments.

5.3 Governance of international food markets via standards

The impacts of market concentration in processing and retail on smallholders' engagement in food supply chains run increasingly through the conditions and requirements imposed in contracts and standards, the latter of which can be largely determined by the private party. Contracts and standards are more commonplace in LMICs where supply chains become spatially longer (e.g. food is transported from rural to urban areas), when a more complex set of intermediates develops and more differentiated and processed foods are exchanged. These three aspects – the increasing length and complexity of the supply chain in spatial, actor and product terms – are illustrative for the structural change of traditional to transitional and modern markets that is taking place or has recently taken place in many LMICs (Reardon and Timmer, 2012).

¹⁵ In analysing market concentration in the seed and biotech industries, Deconink (2020) concludes that there is limited evidence that industry concentration leads to higher prices for farmers. The study, however, admits that available data sets are incomplete in geographical coverage with notable gaps in the developing world.

¹⁶ In a review of recent studies, Treurniet (2020) concludes that most studies on (non)competitive behaviour in agricultural markets focus on the role of traders. The author claims that the methodologies used in those studies are not well suited to proxy competitiveness of large markets that are dominated by a few processors or exporters, such as cacao grinding, and export of coffee and bananas.

Over the past two decades, public and private standards¹⁷ on quality, food safety, environmental and ethical aspects have become increasingly important in regulating food production and trade.¹⁸ Their rapid spread through trade and foreign direct investment has triggered debates on their impact on international trade and development, with many arguing that standards are non-tariff barriers to trade and marginalize the poor. Summarizing theoretical and empirical literature, Swinnen (2016) arrives at nuanced conclusions. Standards can promote trade but who gains (domestic/foreign consumer/producer) depends on the nature and implementation aspects of the standard. Empirical evaluation of the trade effects of a standard is complicated because of the detailed information requirements (on costs to firms and external effects by consumers). Whether protectionist or not, standards will affect developing countries by imposing new costs or by enhancing trade.¹⁹ Swinnen (2016) refers to many examples from the empirical literature showing that growth in exports from developing countries in Africa and Asia in recent years has been strong in sectors where standards have spread rapidly, for example in high-value food products such as fruits, vegetables, seafood, fish, meat and dairy products. In all these examples, the importance of the positive effects of technology transfers, productivity growth and value chain transformation (or modernization) are shown. Box 3 highlights some examples cited in Swinnen (2016) and Swinnen and Kuijpers (2020).

Box 3: Contract systems including input provisions and technology transfers

Several studies on horticultural export chains in Africa show the benefits of the provision of specific inputs (such as seeds and fertilizers) as well as technical advice and extension services to farmers. For instance, Minten et al. (2009) find that access to technological inputs was a major reason why small-scale vegetable producers were motivated to sign up for contracts with exporting companies. Bellemara and Novak (2016) show that contract systems with extensive inputs and technology transfers are common for exporters and processors in additional African value chains (e.g. cotton, rice and barley). In Swinnen (2006), several studies on Eastern Europe and Central Asia documenting value chain contracting systems in the early 2000s in various sectors such as sugar and dairy are discussed and analysed. Dries et al. (2009) and Van Berkum (2007) summarize evidence on dairy contracting systems from various countries, showing provision of essential inputs such as credit and animal feed in combination with technical advice (e.g. on hygiene and breeding) had a major impact on milk quality. Similar contract systems are used in the dairy sector in Uganda (Van Campenhout et al., 2019). Describing the growth of high-value agriculture in Asia (with examples from Bangladesh, India, Indonesia, Pakistan, the Philippines, Thailand and Vietnam) Gulati et al. (2007) shows the rapid rise of vertical linkages of retailers, processors and traders/exporters with farmers in various forms of contract farming, including input provisions and technology and knowledge transfers, with important positive effects on farmers' productivity.

Yet, it is not only international standards that affect development. Literature demonstrates that successful sectors were transformed through investments and quality upgrading, including the introduction of standards (Reardon and Timmer, 2012). Whether the (poor and/or capital-constrained) smallholder can

¹⁷ Public standards are established to guarantee human, plant and animal health and quality of products, whereas private standards relate to company- or branch-specific requirements set by contracts between the food retail and processing sector and farmer and growers. SPS measures agreed by the (now 164) country members of the World Trade Organization is one illustration of public standards. GLOBALGAP is a private standard ensuring compliance with good agricultural practice criteria (GLOBAL GAP, undated).

¹⁸ A number of factors contribute to explaining the recent increase in food standards (Swinnen and Maertens 2007). First, a series of major food safety hazards in high-income countries has increased consumer and public concern on food-borne health risks and created an increased demand for food safety. Second, rising income levels and changing dietary habits have increased the demand for high quality food. Third, consumers are also increasingly (made) aware of ethical and environmental aspects related to food production and trade, which has increased the need for specific standards related to these aspects. Fourth, the increased trade in fresh food products such as fruits, vegetables, meat and dairy products – which are either prone to food safety risks or subject to specific quality demands by consumers – have increased the need to regulate trade through standards. Fifth, the increased role of large multinational food and retail companies contributes to the increased importance of private food standards. Large retail chains emphasize freshness, product quality and food safety, with potentially high reputational damage and loss in market shares from selling unsafe food.

¹⁹ Also because standards will reduce transaction costs as they can communicate the presence of desirable attributes or the absence of undesirable attributes, which are otherwise difficult, costly or even impossible to verify by consumers.

participate and benefit from this development depends on his or her access to inputs and/or technology in order to comply with the standard, and the bargaining between the farmer and the processor over the distribution of the additional revenues. Empirical evidence shows that, in many developing countries where farmers typically have difficulties in access to inputs, processors offer a contract that includes the transfer of inputs and technology for the high-standard product. As contract enforcement is not always obvious in many developing countries, Swinnen (2016) explains that the processor has to offer the farmer a sufficiently high price to make the contract self-enforcing.²⁰ Empirical literature shows that value chain governance through contracting and (hybrid forms of) vertical integration that involve technology and input transfers to local suppliers with limited access to capital and technology can be successful in integrating smallholders with high-value high-standard sectors. Moreover, when the processing and/or trade is organized by monopsonistic (that is, only one or two buying) companies, all bargaining power lies with the buyer.

The ways in which the participation of smallholder farmers in high-standard export production and trade contributes to rural livelihoods and poverty reduction depends on whether and the extent to which contracted suppliers effectively benefit from this participation. Referring to many recent studies, Swinnen and Kuijpers (2020) contradict the claim that the gains from high-standards agricultural trade are captured only by foreign investors, large food companies or developing country elites. Generally, this literature finds that once small- to medium-scale farmers are included in contract schemes and high-value export chains, they benefit significantly. The empirical evidence is based on studies covering a broad set of products, such as fruits and vegetables, tobacco, coffee, aquaculture, dairy, poultry, and cocoa. There is also some evidence of positive welfare effects of participation in contract farming schemes around staple crops such as potatoes and rice.²¹ This literature also shows that smallholders are more likely to be included in value chains if the farm sector is more homogeneous (i.e. when there are only/mostly small farms in the region) and when sourcing from smallholders is “cheaper or not too much more expensive” (Swinnen and Kuijpers, 2020) than sourcing from large farms. Sourcing from smallholders can be achieved by reducing specific transaction costs (for searching, screening, communication of requirements, technology transfer, quality monitoring, etc.), for example by investing in infrastructure, establishing producer associations and establishing third-party quality control.

6. Policies supportive of a more competitive and inclusive food system

Importing food when domestic production falls short of demand can enhance a country's food security (by contributing to food availability) but it has drawbacks. For example, increasing food imports may eradicate local production by putting pressure on farmers' prices, increase food import dependency and make consumers more vulnerable to large price fluctuations in the international markets. A food net-importing country could build their own domestic production in order to improve domestic food availability. However, if this would imply imposing import restrictions (e.g. via import tariffs or quota), domestic prices may rise to well above international market levels, to the benefit of domestic farmers but making food more expensive for consumers; support for one constituency typically comes at the expense of another (whereas smallholder families may be negatively affected as well in case they are net-buyers of food). Moreover, such policies go against the WTO principles stating gradual liberalization of trade is pursued based on equality and reciprocity as two important pillars, in order to guarantee an equal playing field in international trade (www.wto.org). Developing country status in WTO gives these countries some privileges but these are limited. There are, for example, provisions in some WTO agreements which provide developing countries with longer transition periods before they are required to fully implement the agreement, allowing these countries to imply safeguard measures in case a sudden surge in food imports causes serious injury to its

²⁰ The holdup possibility (that is, side-selling, or price re-negotiation) increases the farmer's effective bargaining power, although he is 'small' and the processor or trader is 'large'.

²¹ A meta-analysis on the welfare effects of contract farming by Ton et al. (2016), based on 26 eligible studies, finds that contract farming has increased the welfare of participating farmers by 62 per cent on average (with a 95 per cent confidence interval between 40 per cent and 88 per cent).

agricultural sector, and offering developing countries technical assistance. Such technical assistance is aiming in the first place to facilitate trade, not to cause trade distortions.²²

Current WTO agreements and principles leave little scope for import limiting policies to correct trade imbalances. Moreover, such policies would distort the efficient use of production factors leading to higher food prices in food deficit countries, depressed prices in food surplus countries, and lower real incomes in both (Martin and Laborde, 2018; OECD, 2019b). The conclusion of a wide body of literature is that trade associated with specific losses or distributional effects that would affect access to food negatively should be mitigated by flanking policies, such as providing social safety nets and establishing risk management tools like public stockholding (the effectiveness of the latter is much debated, see e.g. Brooks and Matthews, 2015). A more long-term sustainable approach is to improve the sector's productivity and competitiveness in order to help generate agricultural growth, supply safe and diverse food at reasonable prices to consumers and promote structural transformation offering income and employment opportunities in and outside agriculture. A sector that invests in efficient production of quality products also has opportunities to export to the international market.

The literature indicates that there is a strong connection between the determinants of overall and agricultural competitiveness, suggesting there are several basic pillars on which farms and companies in the agricultural and food sectors can further develop their competitiveness (Jambor and Babu, 2016; WEF, 2015):

- **Solid and efficient operating institutions:** refers to the legal, informal (e.g. culture, religion) and administrative frameworks under which economic actors interact, and that create trust among economic actors and promote investment for economic growth and prosperity.
- **Stable macroeconomic environment:** avoiding continuous fiscal deficits and/or high inflation rates, this is a key condition for markets to function properly and for promoting economic growth as it contributes to price stability.
- **Stable exchange rates:** these are important, in particular in an open economy, as currency fluctuations affect domestic market price stability by changing the relative prices of imports and exports (tradables) to non-tradables (such as services). For instance, a currency devaluation (decline in the value of a domestic against a foreign currency) makes imports more expensive and could incentivize substitution from imported to domestic produce, whereas exports become cheaper and more attractive to foreign customers. Volatile exchange rates cause much uncertainty, whereas fixed exchange rate regimes may limit a country's adaptability to external shocks, with possibly highly negative impacts on a country's (current account of its) trade balance (see de Oliveira et al., 2021). The level (and volatility) of the exchange rate affects a sector's competitiveness significantly.
- **Well-functioning product, labour and financial markets:** market competition and rivalry make markets work efficiently.
- **Innovation capacity:** one that is based on efficient research and development, research institutions, collaboration and the protection of intellectual property, is beneficial.

Much of these elements of competitiveness are reflected in the Policy Framework for Investment in Agriculture (PFIA), developed by OECD (2014) and in the World Bank Doing Business in Agriculture (Diaz-Bonilla et al., 2014). Although these frameworks (and literature) show that forces shaping agricultural competitiveness potential are specific and complex, some recommendations and policy lessons can be drawn from this literature on the strategies that improve agricultural competitiveness. Some of the most frequently mentioned policy interventions in literature are as follows.

Investments in physical infrastructure: the building of roads, transportation, storage facilities, energy and communication services will foster agricultural competitiveness by reducing transport costs and connecting farms to markets, for both inputs and outputs, through which production and distribution costs decline and incomes increase. Better water storage and management (e.g. via investments in irrigation systems) will make farmers less vulnerable to weather shocks.

Market access to credit: access to credit is a severe constraint for many smallholders in LMICs. An important factor is the lack of adequate collateral required by banks. Measures that can help farmers get

²² This is explicitly laid down in the World Trade Organization Trade Facilitation Agreement, adopted in 2014.

access to credit include a well-functioning framework for collateralized commodity transactions (guarantee fund, warehouse receipts), efforts to make land markets dynamic (without compromising the rights and positions of small landowners and tenants), and efforts to reduce agricultural risks (e.g. by extension and market information dissemination).

Access to output markets: farmers' access to output markets is also a critical element of agricultural competitiveness. This can be addressed mainly by supporting farmers' integration into supply chains. Possible policy interventions are:

- Increasing the capacity of farmers to comply with food quality and safety requirements through extension and investment support in upgrading farming practices. Public support can be given for the development of good agricultural practice, good manufacturing practice, improved technology and training. It may be a good strategy to provide support in public-private partnerships and let the supply chain leader take the lead since the results are directly related to market success. This does not alter the fact that investments in the application of food safety rules must be embedded in a well-functioning national food safety system, which is still a major challenge in many developing countries (see Grace, 2015; Roesal and Grace, 2014; and Lamuka, 2015, for examples in sub-Saharan Africa).
- Investing in intermediary institutions and farmer organizations (e.g. by legally and financially facilitating the establishment of associations and other forms of cooperation). Intermediary institutions and collective action on markets reduce the cost of exchange between farmers and other value chain actors. Moreover, empowering farmers will strengthen their bargaining power in the value chain and vis-à-vis governments for better policies. Policies include stimulating farmers' organizations, investing in institutions for (independent) quality and safety control and certification, competition policy to ensure sufficient alternative market outlets, and choice in inputs, public extension services and market information services (Swinnen and Kuijpers, 2020).
- Increasing the value added of agricultural products through further emphasis on diversification. This requires upgrading the processing and distribution sector with capital, knowledge and skills (Reardon et al., 2019). Diversification of the product portfolio will increase opportunities to take advantage of trade via export. Moreover, it will create employment and income opportunities outside agriculture, contributing to sectoral diversification of the economy (López-Cálix, 2020).

By strengthening the sector's competitive position, a country dependent on food imports can produce a greater proportion of its own needs, increase self-sufficiency and thus strengthen its national food security position. Investments in strengthening the sector's competitive position will have to take the country's natural conditions as a starting point, but diversification of production and innovation in production methods are important development strategies, including creating added value for primary raw materials. Diversification and innovation strategies make the sector strong enough to compete with foreign supply not only on price, but also on quality and other product attributes. Food imports then will become complementary to a country's own agricultural and food production and imports need not have a negative impact on farmers' prices and incomes (see Figure 1 panel on availability and access), whereas domestic consumers are offered more choice and diversity of food products (see Figure 1 panel on utilization). With the strengthening of the competitive position of the agricultural sector, there is also a greater chance that a country can export successfully, which also has favourable consequences for price and income developments within the sector and contributes to food security.

Trade leads to a wider supply of food than can be produced domestically but does not automatically lead to the intake of healthier diets. Trade can affect dietary quality in many ways through its influence on the stability and diversity of food supply, absolute and relative food prices and household and national income, but countries considered to be food secure can still have high levels of undernutrition and diet-related non-communicable diseases. The 2020 Global Panel report seeks ways in which trade instruments can help to address sub-optimal diets but finds insufficient evidence to provide unambiguous advice on specific trade policies to be adopted to promote better diets and nutrition (Global Panel, 2020). Instead, the report argues that domestic policies, rather than trade policy instruments, should be used to address issues of dietary quality as part of national public health policies that favour healthy diets. Such policies should be made non-discriminatory on domestic and foreign products to be compliant with World Trade Organization rules on imports. This implies that trade may contribute to protecting consumer safety and promoting healthy diets only if standards and regulations applied to food trade are reflected in domestic food systems.

With examples from France, Fiji, Ghana and Samoa, the report illustrates options and challenges for policymakers to develop trade-compliant nutrition policies.²³ At the same time, to counter allegations of disguised protection, transparent and scientific measures need to be used to ensure the necessity of interventions and a comprehensive approach needs to be applied to incorporate both imported and domestically produced products to ensure that policy measures are non-discriminatory. The Global Panel report advocates more research to gain better insights into how current trade patterns affect dietary quality and nutrition, and how existing policies other than trade affect dietary quality. Such assessments will contribute to building coherence between particular trade policies and goals related to health and nutrition, and provide ideas on how new trade policies can support improvements in dietary quality.

7. Conclusions

In discussing the role of trade in food security, this paper highlights the position of LMICs that are dependent on food imports. Many are located in the African continent, where underutilized land and labour resources suggest high food production potentials. If used more productively and efficiently, these resources could therefore contribute to improved food security.

Other main findings and messages are as follows:

- Trade openness provides important food security gains in terms of improved food availability and utilization, but effects are not evident. Low prices may put farmers under pressure and food import dependency and import bills may increase, making consumers vulnerable to external shocks.
- Many African countries are food import dependent. Population growth is the main driver of food imports in most African countries.
- Many food net importers depend on the export of one or two primary commodity products to generate export revenues. Diversification of their economies is necessary to reduce the vulnerability of these countries to risks associated with the worsening of terms of trade effects and food price volatility on international markets.
- Agricultural potential in Africa, where there are many food net importers, is underutilized. Investments in productivity increases and policies conducive to agricultural development are the key to enhancing sector competitiveness and boosting the continent's food security.
- Food supply chain relations are increasingly of a transnational nature and food markets are becoming more concentrated, yet there is little empirical evidence that market concentration among traders and processors leads to market power that is abused, in the sense that processors and/or retailers and traders are reducing farm prices below the level that equalizes supply and demand.
- Production and international trade are increasingly regulated by standards on quality, food safety, environmental and ethical aspects.
- Value chain governance forms that include technology transfers and improve access to inputs have positive socioeconomic and inclusion effects on smallholders.
- Macroeconomic, exchange rate and sector-specific policies go together to enhance a country's competitiveness and growth, and promote structural transformation offering income and employment opportunities in and outside agriculture, which can add to national food security.
- Major sector-specific policies to support competitive agriculture in food net importing countries aim to reduce access to markets costs, such as building infrastructure to reduce transaction (including logistics) costs, improving the access of smallholders to markets, encouraging innovation and adoption of technologies to increase efficiency and diversity of produce.
- Given that standards are playing such an important role in international food trade, taking advantage of trade opportunities implies the building of effective food safety and quality systems.
- Domestic policies are leading in improving food quality where trade can be supportive, provided such policies are non-discriminatory against domestic and foreign products.

²³ With the aim of reducing saturated fat intakes, Ghana implemented a food standard applied to both imported and domestic meat, which was considered non-discriminatory and in accordance with World Trade Organization rules. France planned to tax palm oil on health grounds based on the high content of saturated fats in palm oil, but this was considered discriminating against palm oil in favour of other oils and other sources of saturated fat.

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Annex 1

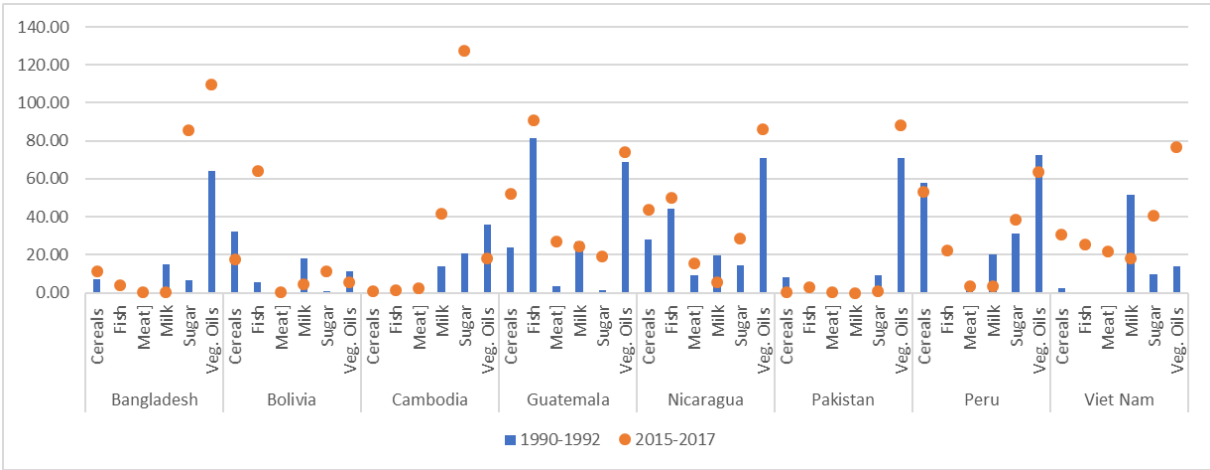


Figure A.1: Share of imports in domestic food supply (in kcal/capita/day) in net-importers of food in some selected Latin American and Asian countries

Source: FAO Food Balance Sheets (own calculations – see also figure 6 in the main text)

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