

AN INSTITUTIONAL AND ECONOMIC FRAMEWORK FOR THE DEVELOPMENT OF GLOBAL VALUE CHAINS IN FOOD AND AGRICULTURE

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Abstract

The article deals with the processes of exchange of agricultural products, which are carried out in several countries. Also, the types of formation of the value chain are considered: forward and backward participation in the trade of other countries, ways of delivering the added value created within the framework of the GVCs to the final demand, Due consideration was given to the role of services in agri-food production, as well as their share in value chains. Some factors that may influence the increase or decrease in the flows of international trade in agri-food products are analyzed.



Introduction. Since the 2000s, international trade in agricultural commodities and food has increased several times in real terms over the last period. Over time, economic entities increasingly resorted to the mechanisms of international trade to increase specialization and use their comparative advantages, dividing the production process into stages and choosing a place to organize each of them in such a way that production is the least expensive. As a result, production processes have become cross-border and global value chains (GVCs) have emerged, i.e., stages of the production process are located across different countries. In the food and agricultural sectors, there are also have GVCs.

Theoretical basis. The 2020 OECD report on the role of global value chains in the production of agricultural products and food reveals 2 stages of the development of fragmentation of production. So, for agri-food sectors, the initial unbundling was primarily characterized by commodity trading and supported by the development of standards and grades. These developments allowed the mixing of products from different origins in bulk shipments, facilitating their transport and use for final consumption or in other production activities. The second stage corresponded to a de-commodification process, with the increasing importance of information about the way food is produced and supported by a range of developments in contracting and marketing arrangements that helped build trust among value chain participants. This resulted in the integration of various agri-food chains with marketing channels and led to an increase in the importance of services both upstream and downstream in the chain. This second unbundling was further driven by innovations in the agri-food sector and improvements in trade logistics.

Revealing the content of the elements of individual links in value chains, the authors of the OECD report emphasize that the cost of an individual product consists of the sum of the costs of several resources, some of which are local (local raw materials, production equipment, labor, working capital, etc.), and some are imported (ingredients, imported equipment, and services, spare parts, etc.). consumables, consulting services, attracted international capital, etc.) Gross trade values are made up of the sum of the value of all those inputs. Understanding GVCs requires unpacking these various elements so that the amount of local transformation can be identified for any given product traded. This approach allows estimation of trade in value added terms.

There are two parts from any given country's perspective:

- a forward looking part that shows the extent to which a country's exports form part of a production process in another country, contributing to that other country's exports

- a backward looking part that shows the extent to which imports from other countries are used in the production of a country's exports.

Broadly, the backward participation index is measured as the share of foreign value added that is included in the total export value of a country. The forward GVC participation index is measured as the share of a country's value added arising from its own exports included in exports of other countries.

The calculation of value added exported for a sector includes both that embodied in direct exports and that which is captured in the exports of other using domestic industries. For example, if the paddy rice industry exports directly into a production process in another country that exports to a third country, but also the processed rice industry exports rice that it sources domestically to that same foreign processing industry, the value added attributed to the domestically sourced paddy rice within processed rice exports are included in determining the forward participation of the paddy rice industry.

Results. The source of value added in final demand can be broken down into the different paths to final demand created by GVCs. These include:

- bilateral path – GVCs that cross two countries and link producers in one country to final consumers in the other;
- other country path – GVCs that cross three or more countries and link producers in one country to final demand in another country via processing that occurs in a third (or fourth or so on) country;
- import own domestic value added path – GVCs that link producers in a country to domestic final demand via a second (or third or so on) country.

According to the OECD report, the most common GVC path is the first – the bilateral path. This accounts for 96% of all domestic value added that ends in foreign final demand (in 2011), compared to 93% for non agri-food products. Imports of own value added, the third path, are relatively small across the world.

Agri-food GVCs are made up of more than just food and fiber –services also matter. Agri-food GVCs extend well beyond these sectors, with linkages to a wide variety of other sectors. For example, even at the farm level, many sectors contribute to production. The production makes use of fertilizers, machinery, and advice from farm consultants such as agronomists, along with applications of new farming methods derived from research and development sectors. Farmers also seek advice from accountants, market analysts, and climate specialists, and use information and data when

making decisions. Once a product leaves the farm, the transport sector is involved and feeds into a wider production system that, in the case of cattle, may extend from the abattoir for meat to the car industry, which uses hides for leather seats and steering wheels.

Unpacking these linkages provides a means to explore what goes into the products end consumers buy. Focusing just on the final consumption of food and fiber,⁴ the average share (globally) of \$1 of agri-food products consumed shows that, while agriculture is important, it does not represent the largest value addition to the food we eat or the clothing we wear. In developed countries, the value contributed by the agriculture sector is on average 26% of the final value, with the contribution of food processing sectors at around 30% (Figure 1). In developing countries, agriculture represents a larger share of the value of the final product – most likely associated with the lower level of product transformation that occurs, rather than differing market structures with, for example, a much higher share of production going straight from producers to consumers through local markets.

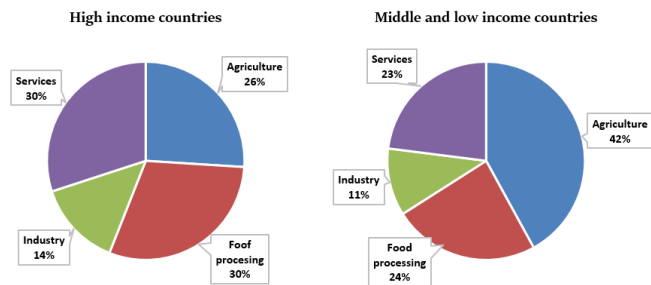


Figure 1. Distribution of returns from final demand along the value chain, 2014³.

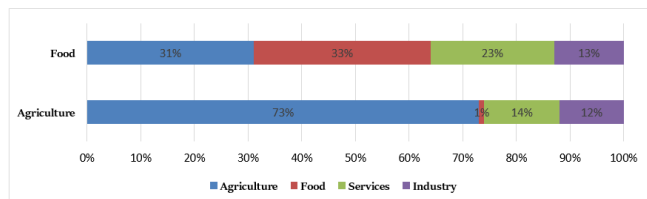


Figure 2. Distribution of average gross export value Share of USD of export value across broad sector groupings²

* OECD (2020-02-04), “Global value chains in agriculture and food: A synthesis of OECD analysis”, OECD Food, Agriculture and Fisheries Papers, No. 139, OECD Publishing, Paris.

Globally, four major service sectors provide inputs into agricultural production and therefore exports. These include trade (all retail sales; wholesale trade and commission trade; hotels and restaurants; repairs of motor vehicles and personal and household goods; retail sale of automotive fuel), transport, financial, and business services (Figure 3). These four sectors accounted for over 86% of service provision to the world’s agricultural exports in 2014 – a figure that has remained stable over time.

Most of these services are provided by the domestic market. In 2014, on average, 80% of the services provided to agriculture and 73% to food were sourced from the domestic market. This underscores the importance of the quality of the domestic services market for agri-food production, including for its international competitiveness.

* OECD (2020-02-04), “Global value chains in agriculture and food: A synthesis of OECD analysis”, OECD Food, Agriculture and Fisheries Papers, No. 139, OECD Publishing, Paris.

Increasing service use along the value chain, as represented by an increase in the service share of exports, is

beneficial for domestic value added growth. This highlights that the development of GVCs in the agriculture and food sectors is not just about mechanization and investments to promote efficiency. The “de-commodification” of output means that it is not only about what is produced, but how it is produced and how it gets delivered to export markets or final consumers wherever they may be. Agricultural production and trade have grown significantly over the past decade. According to the World Bank (2021), the value added by agriculture, forestry, and fishing increased from \$1.13 trillion in 1990 to 1.14 trillion dollars in 2000 and to \$3.7 trillion in 2020 (at current prices. Figure 4).

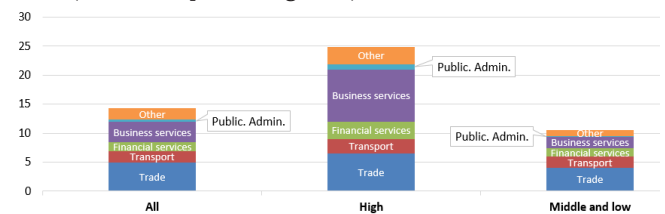


Figure 3. Major service inputs into agri-food exports by broad country groupings, 2014 Global weighted averages expressed as a share of total industry domestic value added⁵

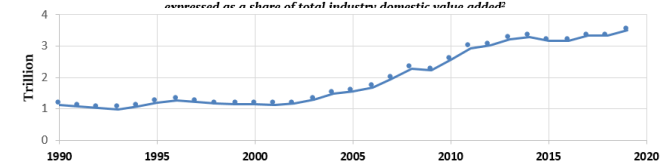


Figure 4. Agriculture, forestry, and fishing, value added World Bank national accounts data, and OECD National Accounts data files⁴.

*Agriculture, forestry, and fishing, value added (current US\$), World Bank national accounts data, and OECD National Accounts data files.

The Food and Agriculture Organization of the United Nations (FAO, 2019) indicates that the value of global agricultural and food trade flows has increased fivefold over the past three decades. The report shows that food exports (excluding fishing) in 1997 amounted to \$304 billion. This figure increased to \$618 billion in 2007 and to \$1.26 trillion in 2017.

Vincent H. Smith, Joseph W. Glauber (2020) cite data showing the importance of agricultural trade. In 2018, almost a quarter of global wheat consumption came from imports. As for rice, global import penetration (imports as a percentage of world consumption) more than doubled from 4% to 9% between 1995 and 2015, and soybean imports increased from 25% of world consumption in 1995 to 42% in 2018. The import penetration of vegetable oils has also increased significantly. Imports of meat, beef, and pork increased compared to world consumption, but the penetration of chicken imports remained relatively unchanged at 10%, even though world consumption of chicken doubled. In 2015, world food exports from developing countries were almost 40% (26% in 1995). Their share in world food imports also amounted to 40% in 2015 (31% in 1995). Trade between developing countries increased, accounting for more than 20% of total trade in 2015 (11% in 1995). Exports from developing countries account for more than 80% of world exports of rice, 70% of sugar, 50% of oilseeds, 46% of cotton, and 64% of tobacco exports. The authors conclude that the contribution of developing countries to world trade in agricultural products has made global supplies more diversified, which reduces the risks to food security.

The OECD asserts that the food and agricultural sector is increasingly organized within the framework of global value chains (GVCs), in which different stages of the process

of converting raw materials into final consumer products are located in different countries. The separation of production, transformation, and delivery was facilitated by the reduction of barriers to trade and investment, as well as the development of contract activities, marketing, and logistics.

The data show that about 20% of exports are re-exported by the first importing country. Services are becoming an increasingly important component of agri-food GVC. They account for about 25% of the total value added in agricultural exports and 35% in food exports. In addition, the services sector accounts for 30% of the final value of agri-food products in high-income countries and 23% in developing countries.

Discussion. Given the wide range of factors affecting agri-food GVCs and the fact that countries may suffer from barriers to other countries' exports, comprehensive and collective action is key to helping all countries benefit from agri-food GVCs.

1. Non-tariff measures (NTMs) are generally higher for agricultural and food products than for many other sectors and often exceed tariffs. They can support or hinder trade, depending on their design.

2. Safety and quality standards can increase consumer confidence, thereby increasing demand. However, unreasonably high compliance costs can lead to higher prices and limit firms' participation. The underlying principles of regulatory development can help to ensure that NTMs facilitate trade and participation in the GVCs without impeding a country's right to regulate. These principles include transparency and predictability, non-discrimination and proportionality (i.e. rules based on scientific evidence and consistent with agreed international standards).

3. Government support policies need to facilitate participation in GVCs and manage associated adjustments

across the food and agriculture sector Domestic agricultural support policies need to be carefully designed. Distorting agricultural subsidies have a harmful effect on the growth of agricultural value added, and particularly on export returns from participation in GVCs that involve domestic processing sectors. This reduces sector competitiveness and harms downstream sectors over time. Subsidies linked to outputs and inputs create market distortions and have a negative impact on labor returns from GVC participation, and hence a longer run negative impact on the employment and wage growth opportunities from trade and GVC participation.

4. The enabling environment to support agricultural production is likely to be a key determinant of the economy wide gains from agricultural and food GVCs. Physical infrastructure, such as quality ports, roads, railways, and airports, plays a key role overall and particularly for economic actors in marginal areas – indeed quality physical infrastructure has been found to have a positive influence on domestic value added creation from GVC participation by agri-food sectors.

5. Telecommunications technology and Information technology (IT) infrastructure that enable consistent access to digital information also support the co-ordination of complex and dispersed production processes. Services, such as transport, telecommunications, finance, and insurance, are essential inputs for economic activities and knowledge-based services contribute to value addition by helping differentiate products for specific markets and consumers. Services represent around 25% of the total value-added in traded agricultural products and around 35% of food sector exports, with restrictions to services trade negatively influencing domestic value added creation in agri-food GVCs.

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