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International trade during COVID-19: The evolution and resilience of the Agri-Food Sector

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Abstract

In the last couple years, we have witnessed unprecedented and catastrophic effects on all dimensions of human life. The Coronavirus disease pandemic represents an exceptional disruption to the global economy and world trade, as production and consumption are scaled back across the globe. Despite the introduction of a vaccine, the full economic and social impacts are still unfolding, as the disease continues to spread in all regions around the world. On top of the death toll and overstretched health systems, the virus and the measures to contain its spread have caused a deep global economic recession and increased extreme poverty and acute and chronic food insecurity. Nevertheless, effects on global trade in food and agriculture remained relatively limited to short-term difficulties at the very beginning of the pandemic. While disruptions of global trade in basic foods such as cereals, oilseeds, fruits, and vegetables were minimal, trade in products affected by shifts in consumption patterns and non-food commodities declined more sharply.

The main purpose of this thesis is to study the impact that the pandemic has had on the agri-food sector, the changes in trade patterns and the policy measures related to food and agricultural trade that were adopted by countries, with a particular focus on Italy.

The first chapter gives a brief introduction to international trade theory. It serves as an overview of world trade, by describing how it is composed and what where the principal changes in the last decades, and analyzes shortly the patterns of global trade in agri-food products.

Chapter II is focused on the impact that the COVID-19 pandemic had on global trade in 2020. It studies the effects of disruption caused by the containment measures, how they evolved throughout the year, and considers some figures and prospects for 2021. Furthermore, the chapter provides a comparison between the financial crisis of 2008-09 and the current crisis, focusing on the different contractions suffered by GDP and merchandise trade globally.

Chapter III, together with the last chapter, are the main subject of this work, namely the resilience of the agri-food sector. The former one breaks down all the changes in pattern of trade, at a global, regional and commodity level, caused by the disruption of the first wave of the COVID-19. It further studies the policy measure introduced by governments both at foreign and domestic level. The latter one is rather concentrated on the demand and supply shocks suffered by the Italian agri-food sector, whose exports are clearly renowned globally and revealed to be very important for the national economy during this tough period.

Chapter I

INTERNATIONAL TRADE

1.1 Theory

Why do we trade? Probably the most important single insight is that there are gains from trade. International trade enables countries to sell goods and services to each other across borders and expand their markets. For example, it would be difficult for a consumer of the northern hemisphere to consume tropical fruits during the winter without importing them. Indeed, trade almost always generates mutual benefit for countries and allows them to access goods and services that otherwise may not have been available domestically.

The pattern of global trade can be explained by differences in relative supplies of national resources, such as capital, labor, and land, but also by international differences in labor productivity. If a Country uses its finite resources in order to specialize in producing a limited range of goods, its production scale and efficiency increases substantially, and allows it to then trade those products for what it wants to consume. Therefore, there are two basic reasons for countries to engage in trading activity, each of which contributes to their gains from trade. First, they can benefit from their differences. Second, countries trade to achieve economies of scale in production.

Countries specialize in production while consuming many goods and services from trade and, because world production increases, it is possible in principle to raise everyone's standard of living. When dealing with the problem of managing scarce resources and the drive for efficiency, economist have come up with the concept of Opportunity Cost. The term is used to represent the potential benefit that a country misses on when choosing to produce one alternative over another. This trade-off arises because the resources devolved in producing a good cannot be used to make something else. The difference in opportunity costs offers the possibility of a mutually beneficial rearrangement of world production.

To fully understand the reason for trade and why it can be beneficial to each country, the concept of Comparative Advantage was introduced.

1.1.1 Ricardian Comparative Advantage

The reason that international trade produces an increase in world output is that it allows each country to specialize in producing the good in which it has a comparative advantage. A country has a Comparative Advantage in producing a good if the opportunity cost of producing that good in terms of the other good is lower in that country than it is in other countries[1]. On the other hand, a country possesses an Absolute Advantage when it is able to produce a product or service at a lower absolute cost per unit, using a smaller number of inputs or a more efficient process than another country that produces the same good or service.

Classical trade theory postulates that countries trade to take advantage of their differences in the productivity of labor. The basic idea, which dates back to the British economist David Ricardo in 1817, is that each country has a comparative advantage in producing different goods and this gives rise to profitable opportunities for trade. The one-factor Ricardian Model formalizes these ideas by defining a simplified economy in which the only factor of production is labor, and by considering only two goods exchanged between two countries. For both countries, labor productivity in each industry is expressed in terms of Unit Labor Requirement, namely the number of hours of labor required to produce one unit of output. Because of scarce resources, there is a limit to what the economy can produce and, therefore, trade-offs arise in the production choice of a country. These are illustrated by the Production Possibility Frontier (PPF), which shows the maximum amount of a goods that can be produced for a fixed amount of labor, and whose slope represents the constant opportunity cost of producing one good over the other. Here the opportunity cost is equal to the ratio of unit labor requirements and, therefore, the Comparative Advantage of a country is expressed in labor productivity terms.

Finally, to determine what an economy will actually produce and trade, the model takes into account relative prices and supply. Workers will choose to work in the industry that pays the higher wage, therefore, because labor is the only factor of production and workers receive the full value of their output, production choice will be determined by the relation between relative prices of goods and opportunity cost in terms of unit labor requirement. The economy will specialize in the production of a good if the relative price of that good exceeds its opportunity cost in term of the other; conversely it will specialize in the production of the other good if the opposite happens and, moreover, it will be indifferent if relative prices and opportunity costs coincide. In absence of trade, relative prices of the

[1] P.R. Krugman, M. Obstfeld, M.J. Melitz. *International Economics, Theory and Policy. Eleventh edition.* Pearson, 2018.

two goods are equal to their opportunity cost, because countries will have to produce both goods to meet demand. Instead, when trade opens, relative prices, together with countries' production specialization, will be determined by their relative demand (RD) and relative supply (RS). Overall, according to the Ricardian model, each country will specialize and export the goods and services in which it has a comparative advantage arising from differences in labor productivity. In addition to differences in labor productivity, trade occurs due to differences in resources across countries, which are better suited to describe trade patterns of the international agri-food market. Indeed, The Heckscher-Ohlin Model will be further analyzed.

1.1.2 Resources and trade: The Heckscher-Ohlin Model

That international trade is largely driven by differences in countries' resources is one of the most influential theories in international economics. This model displays that the comparative advantage is influenced by the interaction between the relative abundance of countries' factors of production and by the relative intensity with which different factors of production are used to produce different goods.

The Heckscher-Ohlin Model relies on three economic concepts:

- The relationship between the Production Possibility Frontier, which considers two factors of production that can be either substitutable or not, and the isovalue line of production.
- The relationship between factor prices and good prices.
- The determination of equilibrium using relative supply and relative demand of goods.

In order to understand the model, a simplified version of economy must be defined: two countries, two goods and only to factors of production, specifically Labor and Capital.

Now, the PPF is no longer constant, as it is defined by two resource constraint. Because production possibilities are influenced by both labor and capital, the line is not straight anymore, but it is a kinked line in the case the two factors are no substitutable. Whereas, if capital can be substituted for labor and vice versa, the line becomes a concave curve. What a country will produce is determined by the meeting point of the PPF and the highest isovalue line, a line along which the value of output is constant and whose slope reflects relative prices of the goods. At that point, the relative price of a good equals its opportunity cost, therefore the trade-off in production equals the trade-off according to market prices.

In this factor-proportion model, producers may choose different amounts of labor and capital to use in the production of goods. Their choice depends on the wage paid to labor and the rental rate paid when renting capital. In competitive markets, the price of a good should equal its cost of production, which depends on the factor prices. Suppose for example that the goods in question are cocoa and wheat and assume that cocoa production is relative labor intensive, while wheat production is relatively land intensive, then changes in wages and rental rate will affect more cocoa and wheat respectively. According to the Stolper-Samuelson theorem, "If the relative price of a good increases, then the real wage or rental rate of the factor used intensively in the production of that good increases, while the real wage or rental rate of the other factor decreases"[2]. Therefore, an increase in the relative price of cocoa is predicted to raise the real income of workers and lower the real income of capital owners. Furthermore, if output prices remain constant, an increase in the amount of factor used in the production leads to an increase of the supply of the good that uses this factor intensively and a decrease in the supply of the other good (Rybczynski theorem).

As in the one-factor Ricardian model, assuming same technologies and tastes, the Heckscher-Ohlin model predicts a convergence of relative prices with trade. The equilibrium point lies between the pre-trade prices, found by the intersection of countries' relative supplies and relative demand. Each economy will specialize in the production of the good where it has a comparative advantage, which in this case will lead the country that is abundant in a certain factor of production to export the good whose production is intensive in that factor. Supposedly, this could be the case for cocoa and wheat, whose main exporters are Côte d'Ivoire and Canada that are relatively labor and capital abundant respectively.

Through these models, it is possible to understand the effects of import tariffs and export subsidies on countries' economies. Tariffs and export subsidies are often treated as similar policies because they both support domestic producers. The former one imposes taxes on trade inflows to drive consumption of domestic goods, while the latter one provides financial easing to domestic producers, in order to induce exports. Their main purpose is to promote certain industries, fix the balance of payments or for distributing income, however they have opposite effects on trade. Indeed, in theory both measures increase the relative price within the country of the good subject to the policy by attracting producer to the industry and forcing consumer to search for substitutes, thus bringing global relative demand down, and therefore almost always resulting in a deterioration of trade.

[2] P.R. Krugman, M. Obstfeld, M.J. Melitz. *International Economics, Theory and Policy. Eleventh edition.* Pearson, 2018.

1.2 Current Global trade picture

Since the early 1970s, world trade as a share of the world production has risen to unprecedented heights. Nowadays globalization, modern transportation and communication have abolished distance and international trade has established a role of unprecedented importance in the global economy. In 2019, the world produced an economic output of about USD 87 trillion at current prices[3]. World trade in goods and services is just under USD 25 trillion, which accounts for about 30% of global GDP[4]. Much of this rise in value of world trade reflects the so called "vertical disintegration" of production: before the product reaches the hand of the consumers, it often goes through many production stages in different countries.

To no surprise, because of this extensive cross-shipping of components, most of the volume of trade today is in manufactured products (about 53%, USD 13.3 trillion) such as automobiles, computers, and clothing. World trade in commercial services such as transport, telecommunications, and financial services, comes in second place with a share of about 24% (USD 5.9 trillion). This segment is very concentrated, indeed the top ten exporters accounted for 54.2% of global exports in 2019 (United states 14.1%). Third is trade in mineral products that includes everything from copper to coal, but whose main components in the modern world are oil and other fuels. Trade in agricultural products, although crucial in feeding many countries, accounts for only a small fraction of the value of modern world trade (about 8%, USD 1.8 trillion)[5].

Trade is a fundamental part of economic activity in the modern era and the main drive for globalization. These days, free trade is essential to ensure that it flows as smoothly as possible. Indeed, most nations are today members of the World Trade Organization, an international economic organization that aims, among other things, at promoting liberal commercial policies: "Lowering trade barriers is an obvious way to encourage trade; these barriers include customs duties (or tariffs) and measures such as import bans or quotas, that restrict quantities selectively"[6]

The current picture, in which manufactured goods dominate world trade, is relatively new. In Britain and United States, two of the largest economies at the beginning of the 20th century, agricultural commodities played a much more important role in their trade.

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[3] *GDP*, World Bank Open Data, https://data.worldbank.org/indicator/NY.GDP.MKTP.CD.
[4] *World trade statistical review 2020*, World Trade Organization, https://www.wto.org/english/res_e/statis_e/wts2020_e/wts2020_e.pdf.
[5] Ibidem
[6] *About WTO*, World Trade Organization, https://www.wto.org/english/thewto_e/whatis_e/what_stand_for_e.htm.

1.3 The Agri-Food Market

Agri-food trade, composed by trade in agricultural commodities and food, is largely made up by trade in products that have undergone some processing (about 70%). As we mentioned before, trade in Agri-food product accounts only for a small fraction of total merchandise trade, a share that has averaged at 7.5% in the past two decades. Since 1995, international trade in food and agriculture have more than doubled in real terms, rising from USD 680 billion to USD 1.5 trillion.

While high-income countries account for most of agri-food trade in value terms, emerging economies and developing countries increasingly participate in global markets. Since the beginning of the new millennium, upper and lower middle-income countries together have increased their share in global agri-food exports from about 25% in 2001 to 36% in 2018. During the same period, the share of low-income countries in total agri-food trade remained almost unchanged at around 1.1 %[7].

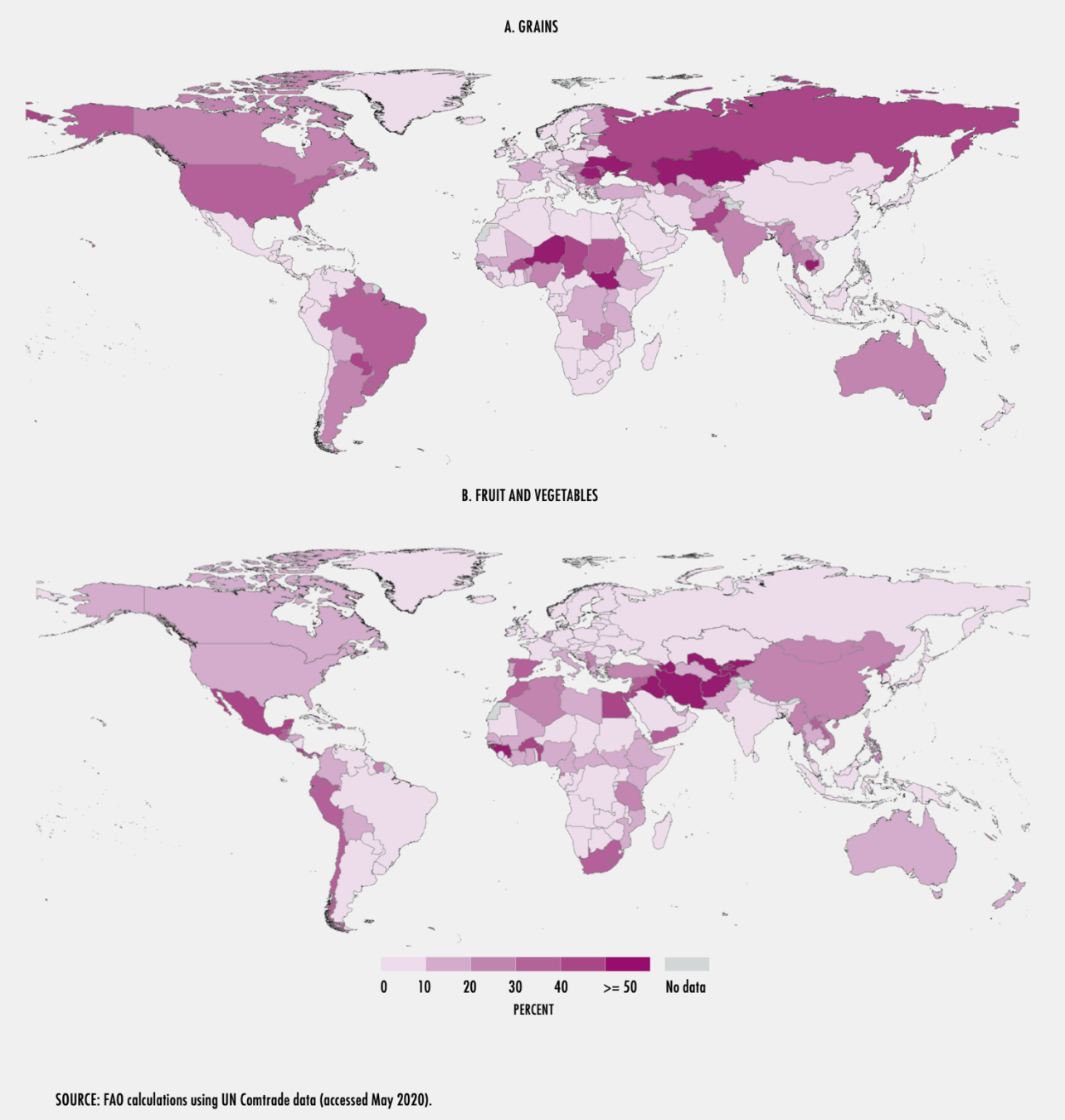
Countries' trading activity can occur within their region or globally. The majority of agricultural commodities are traded inter-regionally, whereas food products are more often traded within the region of origin, suggesting that processing facilities are located close to the consumers. Most of the high-income countries, in order to provide inputs for their food industry, import agricultural commodities from Latin America or Africa. This general geographical pattern, however, does not hold always. For instance, European trade between its member states is higher in agricultural commodities than it is in food products.

Which foods countries trade depends on a multitude of factors, including their comparative advantage in production and consumer preferences. As we previously analyzed in the Heckscher-Ohlin Model, the product-mix is often determined by resource endowments and natural conditions such as climate. Countries, which have a comparative advantage in producing the good that relatively intensively uses the factors of production in which the country is relatively well-endowed, will also feature relatively higher shares of these products in their exports. This the case of the example mentioned earlier, where Côte d'Ivoire and Canada, that are relatively labor and capital abundant, are leading exporters of cocoa and durum-wheat respectively. Many grains, for example, are mainly produced in temperate zones, while a large variety of fruit and vegetables can be produced in warmer climates. Trade shifts products from surplus to deficit regions, which is reflected in regional trade patterns. Countries where conditions favor the production of fruit and vegetables are characterized

[7] *The state of agricultural commodity markets 2020. Agricultural markets and sustainable development: Global value chains, smallholders' farmers and digital innovations*, FAO, 2020 http://www.fao.org/documents/card/en/c/cb0665en.

by higher shares of these products in their total exports. Equivalently, countries which are comparatively less advantaged in the production of cereals or fruits are more dependent on imports of these products[8].

Share of exports of selected food aggregates in total Agri-Food exports, average 2016-2018



[8] Ibidem

Chapter II

COVID-19 AND WORLD TRADE

At the end of 2019, world trade in merchandise had already registered a 3% decline in value. This was mostly driven by trade tensions in Europe and Asia and slowing economic growth, with events such as the Brexit and China-United States trade war. At the same time, in China, the city of Wuhan reported a cluster of pneumonia cases of unknown etiology to the World Health Organization (WHO), which would be later recognized as cases of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), thereafter named COVID-19.

On 23rd January 2020, the first lockdown was imposed in many countries around Wuhan and shortly after the WHO identified the coronavirus as an epidemic confined to that specific geographical area. The WHO declared the global Coronavirus pandemic on 11th March, and by the end of the month the virus had spread to 202 countries all over the world, causing the first deaths and posing a serious threat to national healthcare systems.

Facing the first wave of COVID-19 pandemic and in absence of a vaccine, governments around the world adopted lockdowns and social distancing measures to slow the spread of the disease. Minimization of travel and social contact constrained people into quarantine and smart-working, forcing entire sectors of national economies to shut down. The hospitality industry was largely hit, with the closures of restaurants, bars, hotels, tourism agencies, etc.…

The pandemic triggered an enormous shock in the global demand for medical products, which largely depend on international trade and global supply chains. Because of disruptions of manufacturing networks and international transport, many countries had introduced prohibitions and restrictions on different type of products. The majority of measures were limited to Personal Protection Equipment (PPE), but to a lesser extent, Sanitizers, pharmaceutical and foodstuffs have also been subject to exports limitations[9].

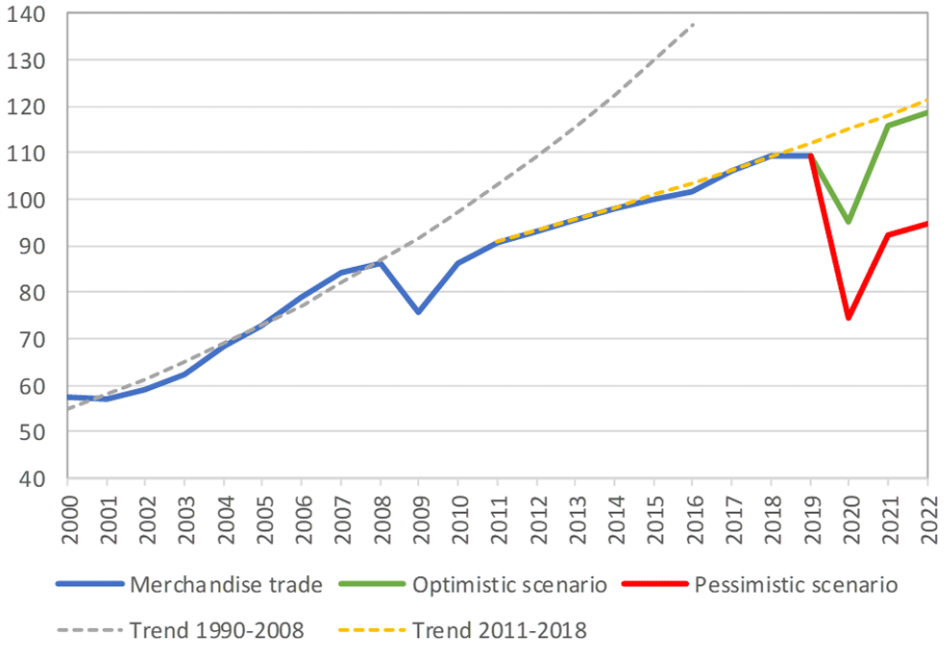
[9] *How COVID-19 is changing the world: a statistical perspective Volume II*, Committee for the Coordination of Statistical Activities. September 2020 https://www.wto.org/english/tratop_e/covid19_e/ccsa_publication_vol2_e.pdf.

2.1 Strong but uneven recovery

Even if trade showed a modest sign of recovery at the beginning of 2020, after the outbreak the pandemic global trade values fell of 3% in Q1 compared to the previous quarter. The downturn was expected to accelerate in the second quarter, according to UNCTAD forecasts, which projected a quarter-on-quarter decline of 27%[10].

In light of the large degree of uncertainty around the pandemic's severity and economic impact, also the WTO portrayed two scenarios in its world trade forecast in April 2020: "a relatively optimistic scenario, with a sharp drop in trade followed by a recovery starting in the second half of 2020, and a more pessimistic scenario with a steeper initial decline and a more prolonged and incomplete recovery"[11].

World merchandise trade volume, 2000-2022



In the second quarter merchandise trade registered its steepest decline. Export fell 24.4% in Europe and 21.8% in North America, with a global decline of 14.3% over the previous period. Asian exports were relatively unaffected, dropping just 6.1%. Figures for trade in commercial services plunged (-23%) due to restrictions on international travel.

[10] *COVID-19 triggers marked decline in global trade, new data shows*, United Nations Conference on Trade and Development, May 2020 https://unctad.org/news/covid-19-triggers-marked-decline-global-trade-new-data-shows.
[11] *Trade set to plunge as Covid-19 pandemics upends global economy*, WTO press release, April 2020 https://www.wto.org/english/news_e/pres20_e/pr855_e.htm.

In June and July lockdowns were eased across the globe, economic activity accelerated, and it became clear that the optimistic scenario was the one actually unfolding. Likewise, the drop in figures recorded were much less severe than those outlined in WTO' s April trade forecast, due to strong monetary and fiscal policies adopted by many governments. The estimated decline in volume of world merchandise trade of -12.9% was revised upward to -9.2% by October.

At the end of the year, the volume of world merchandise trade was down only 5.3%, resulting in a much smaller than expected contraction. This performance can be partially explained by the announcement of the new COVID-19 vaccine in November, which contributed to improved business and consumer confidence, and boosted trade in the last quarter of the year.

Overall, global trade held up relatively well in 2020 and much better than all international organization had foreseen. But why was it that trade declined less than feared? Strong fiscal and monetary policies were amongst the biggest factors because they helped prevent a larger drop in demand by boosting personal incomes. These measures supported more exports by allowing some households to maintain relatively high level of consumption. Lockdowns and travel restrictions caused consumers to shift spending away from non-traded services and towards goods. Innovation and adaptation by businesses and households kept economic activity from falling even more. Manufacturing supply chains were able to resume operations, and many people shifted to working remotely, generating income and demand[12].

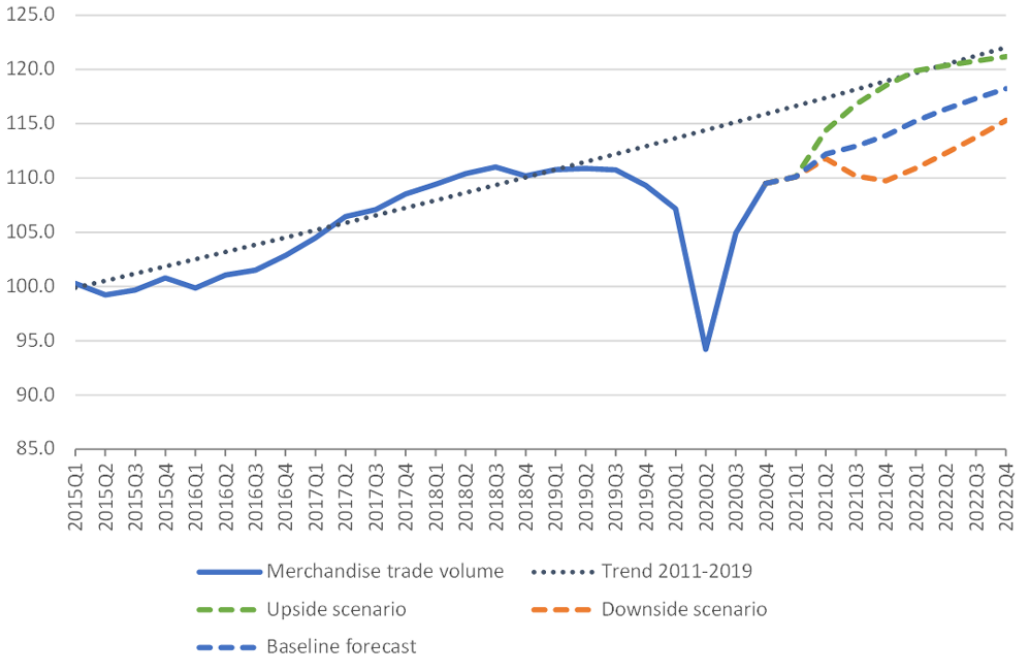
Summary of recent forecasts for world GDP and trade

	Real GDP (% change)		Trade volume (% change)		Elasticity (ratio)	
	2020	2021	2020	2021	2020	2021
WTO Trade forecast (April 2020)						
- optimistic scenario	-2.5	7.4	-12.9	21.3	5.3	2.9
- pessimistic scenario	-8.8	5.9	-31.9	24.0	3.6	4.1
IMF World Economic Outlook (April 2020)	-3.0	5.8	-11.0	8.4	3.6	1.4
World Bank Global Economic Prospects (May 2020)	-5.2	4.2	-13.4	5.3	2.6	1.3
OECD Economic Outlook (June 2020)						
- single hit scenario	-6.0	5.2	-9.5	6.0	1.6	1.1
- double hit scenario	-7.6	2.8	-11.4	2.5	1.5	0.9
Memo items:						
IMF GDP at market exchange rates	-4.2	5.4	-11.0	8.4	2.6	1.6
World Bank GDP at purchasing power parity	-4.1	4.3	-13.4	5.3	3.3	1.2

[12] *World trade primed for a strong but uneven recovery after COVID-19 pandemic shock*, WTO press release, March 2021 https://www.wto.org/english/news_e/pres21_e/pr876_e.htm.

On March 31st, 2021, the WTO forecasted an upside and a downside scenario, both based on short-term risk centered on pandemic-related factors: If vaccine production keeps up with demand and dissemination accelerate, trade would meet pre-pandemic level by Q4 of 2021. To the contrary, if containment measures cannot be relaxed, trade growth could drop 2% at the end of the year.

World merchandise trade volume, 2015Q1-2022Q4



Again, international trade performed better, indeed, merchandise trade volumes exceeded pre-pandemic levels in Q1 of 2021, with an increase of about 3% relative to Q4 2019, while trade in services remained substantially below averages. This rebound was mainly driven by a strong export performance of India, South Africa and East Asian countries, such as China (+18.9% with respect to previous quarter), and concealed an uneven economic recovery across regions globally. Indeed, Russian Federation Exports remained below average, and COVID-19 is expected to continue disrupting the economies and trade of many developing countries throughout 2021.

Based on preliminary information, trade in services was still below pre-crisis levels but growth is gaining pace, with figures going from an average +2.9% in Q1 to 4.25% in Q2 on a quarter-on-quarter basis. This further surge is mainly driven by digitally deliverable services, such as telecommunications, computer and business services, although, also travel showed an uptick in Q2[13].

[13] OECD, *International trade statistics: trends in second quarter 2021.* 24 August 2021, https://www.oecd.org/newsroom/international-trade-statistics-trends-in-second-quarter-2021.htm.

2.2 COVID-19 and 2008 crises

As the WTO affirmed in its trade forecast in April 2020: "The economic shock of the COVID-19 pandemic inevitably invites comparisons to the global financial crisis of 2008-09. These crises are similar in certain respects but very different in others"[14].

The economic context is very different, indeed, the Great Recession of 2009 arose out of economy-wide stress, particularly in high-income countries, while the "Great Lockdown" crisis was borne outside of the global economic system and is affecting both high-income and low-income countries. Lockdowns and travel restrictions imposed significant supply-side constraints on national economies, drastically reducing output and employment in sectors that are usually resistant to business cycle fluctuations, and by producing major demand shocks through restrictions on movement of consumers. To the contrary, the shocks generated by the financial crisis did not have such direct effects on supply chains but were rather concentrated on the demand side. During COVID-19, supply and demand shocks interacted and amplified each other, resulting in a contraction in GDP that was much stronger in the current recession compared to the drop recorded in 2009 (-1.7%), with International Monetary Fund (IMF) estimates around -3.3% in 2020.

The inevitable comparisons between the two crises arises from the fact that both triggered similar government responses. As in 2008-09, strong monetary and fiscal policies were introduced by many governments in 2020. Although the trade decline, at the COVID-19 outbreak, was similar in magnitude to the global financial crisis, the course of events unfolded differently and exposed subtle differences between the two crises. As discussed earlier, forecasts and estimates for volumes of merchandise trade became more and more optimistic throughout the year and, ultimately, the fall recorded was just -5.3%. This greater than expected recovery is to be attributed to the timing and nature of governments interventions, indeed, monetary and fiscal policies were quicker, much greater in scale and geographic coverage than the response to the 2008-09 global financial crisis.

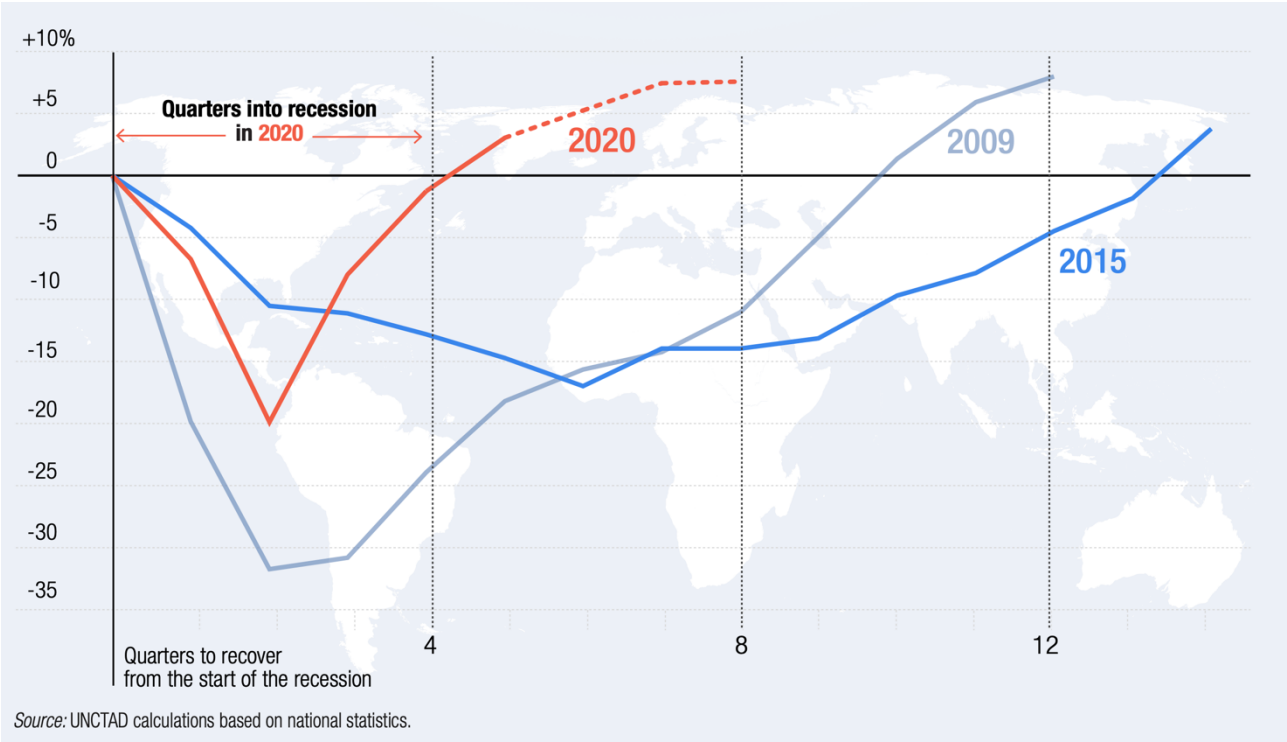
Meanwhile, according to the WTO, other two factors may have played a role in the different recoveries experienced in the two crises. First, income support to households and expectations that the pandemic would eventually ease may have encouraged consumers to maintain consumption levels at a higher level than in 2008-09. Second, during the "Great Lockdown", much of the decline in

[14] T*rade set to plunge as Covid-19 pandemics upends global economy*, WTO trade forecast. April 2020 https://www.wto.org/english/news_e/pres20_e/pr855_e.htm

output was concentrated in non-tradeable services such as hospitality, personal services and entertainment, which tend to be less import-intensive than manufacturing[15].

In the first quarter of 2021, Global trade rebounded higher than pre-crisis levels, with a growth of 4% quarter-over-quarter and an increase of 10% compared to Q1 2020. It took just four quarters, after the start of the "Great Lockdown" recession, for merchandise trade to fully recover, compared to nine quarters that it required after the 2009 recession caused by the financial crisis in 2008[16].

Cumulative change in global trade from the start of each recession



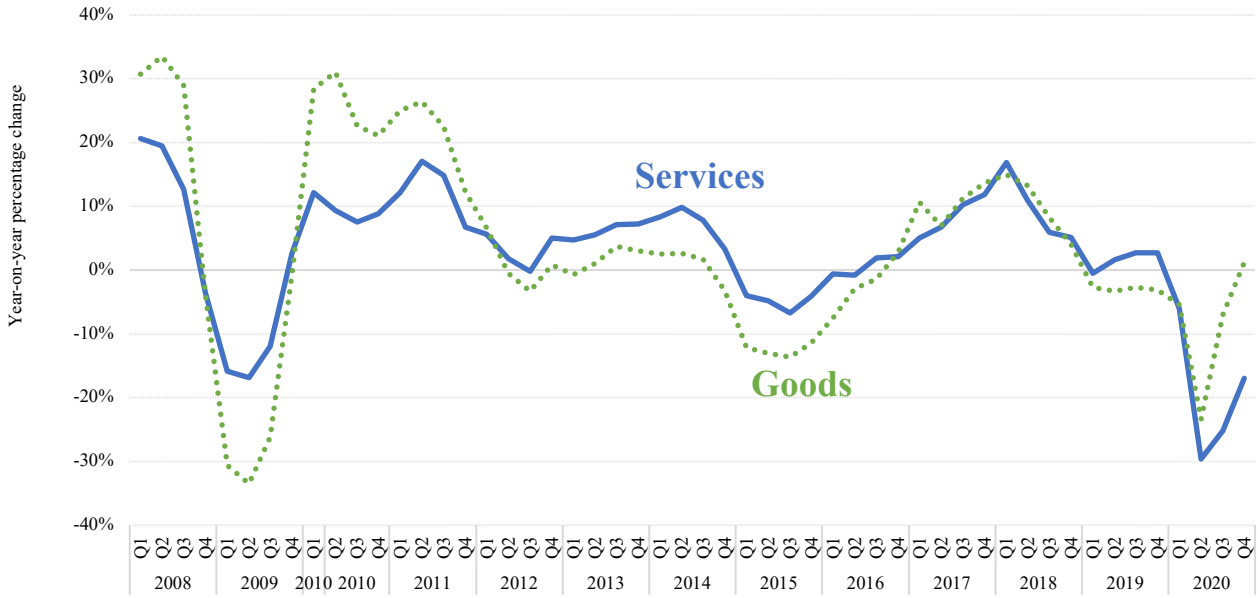
Source: UNCTAD calculations based on national statistics.

[15] WTO, Press release. *Trade falls steeply in first half of 2020.* June 2020, https://www.wto.org/english/news_e/pres20_e/pr858_e.htm.
[16] UNCTAD, Global Trade Update, *World trade rebounds to record high in Q1 2021.* 19 May 2021, https://unctad.org/system/files/official-document/ditcinf2021d2_en.pdf.

2.3 The impact in details, 2020

If we take a closer look at the impact of the pandemic in 2020, trade in nominal USD term fell more sharply with a 12% percent decline compared to 2019. The disruptions had a more severe effect on trade in commercial services with a drop of 21% compared to a 7.7% decline in merchandise trade. With the first lockdown, commercial flights and holidays were cancelled leading to figures as low as -30% in Q2. On the other hand, demand for essential good held up in all major economies, resulting in a less severe decline of 23% in the same quarter. By mid-year, recovery started and trade in goods exceeded its pre-pandemic level in the last quarter[17].

World trade in goods and commercial services, 2008-2020, quarterly



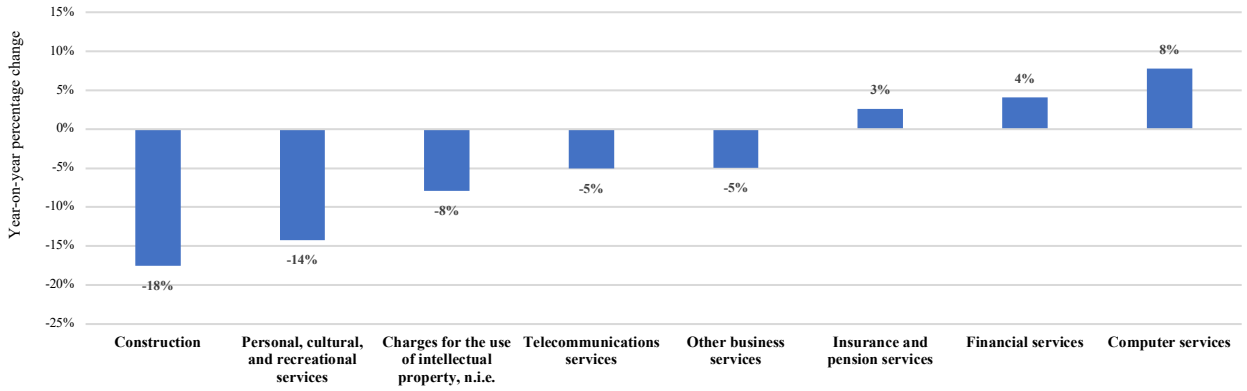
Source: WTO-UNCTAD-ITC estimates.

Travel restrictions were the hardest hit to commercial services. International travelers' expenditures were down 81% in Q2 of 2020, and transport services trade dropped 29%. Delivery of services in sectors requiring physical presence or face-to-face interaction, such as constructions, personal, cultural and recreational services, and other business services, were highly affected. In particular, global construction exports were down 18% due to the postponement of many building projects around the world. Conversely, other commercial services, such as insurance and pension, financial services, and Computer services, experienced a positive trend, with the latter one boosted by a shift

[17] *World Trade Statistical Review 2021*, World trade organization
https://www.wto.org/english/res_e/statis_e/wts2021_e/wts21_toc_e.htm

toward remote working and increased digitalization (+8%). For instance, US exports of cloud computing and data storage services rose by 25% in 2020, accounting for 16.8% of US computer services exports[18].

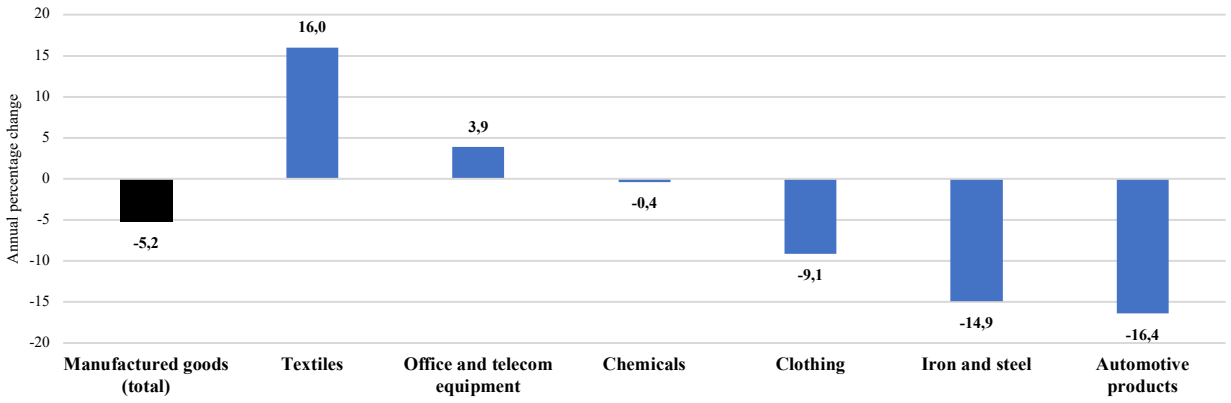
Other commercial services exports by subsector, 2020



Source: WTO-UNCTAD estimates.

Trade in merchandise declined by 7.7% in nominal USD term, with export of manufactured good down 5.2%. The most impacted sector was trade in fuels and mining products (-23.9%), due to a big drop in energy prices and a fall in demand. Plummeting fuel prices were the main driver of this decline, recording an unprecedented price slump of 33.2% in March 2020. Moreover, manufacturing supply chain were among the most affected, such as those of the automotive industry, followed by iron and steel, and clothing. Together with a weak demand, disruption to production lines resulted in a decrease in export of automotive products of about 16.4%. On the other hand, due to demand for protective equipment (PPE), world exports of textiles increased the most among manufactured goods in 2020, growing by 16%[19].

World merchandise exports of manufactured goods, 2020



Source: WTO-UNCTAD-ITC estimates.

[18] Ibidem
[19] Ibidem

Despite an overall fall in trade, exports of agricultural products increased by 0.9% in 2020. The reason being a rather income-inelastic demand compared to other merchandises, which reflects the essential nature of food. In addition, most of agricultural trade takes place in bulk marine shipments that were relatively less disrupted at the outbreak. The resilience of the agri-food sector is analyzed more in dept in the next chapter, which outlines all the changes in patterns of trade and the political measures introduced as the virus spread across the globe. The period in question will be the first half of 2020, characterized by a widespread market uncertainty and the unfolding of countless events.

Chapter III

THE AGRICULTURAL RESILIENCE

Nowadays, international trade in agricultural and food products is very important in assuring food global security. Many countries are completely dependent on food imports and others, through trade, increase the diversity of foods available to consumers. Therefore, one of the big questions is if the global food system is able to withstand all disruptions that came with the COVID-19, ensuring that nation can met their import demands and realize export earnings. Since the outbreak, the pandemic has had impacts on both demand and supply of agricultural and food products.

Demand has been heavily affected by the global economic recession, due to a sharp fall in income and consumer spending. Restrictions imposed by governments led to a shift in purchasing modalities. Restaurants, bars, and hotels were closed during lockdowns, and people increased their consumption at home by ordering food online, triggering a rise in e-commerce deliveries. Massive changes in consumer behavior occurred as well. Many costumers' choices were tied to fears of infections, causing increase in consumption of both staple foods and ready-to-eat food that can be stored.

The supply side was impacted the most by border and travel restrictions. These limitations had a severe impact on migrant workers and resulted in shortages in agricultural labor. Likewise, during lookdowns, food processing facilities were either constrained to shut down or to run operations at lower capacity. Disruptions came also from difficulties experienced by the logistics sector. Many perishable products, namely fruits and vegetables, were affected because of limitations on commercial flights. Quarantine measures, additional documents and examinations, caused problems in maritime freight and at harbors, due the continuous changes in operation protocols made by countries.

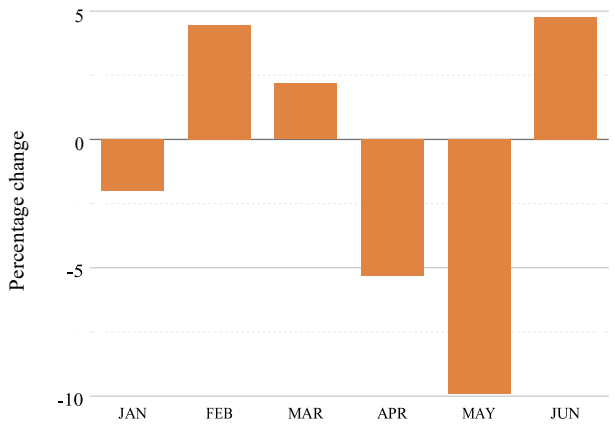
While global agricultural trade in the first half of 2020 remained close to, or even exceeded, the level of 2019, the pandemic still had pronounced short-term effects on the patterns of trade in specific agricultural and food products. Concerns about food security and safety and the resilience of the trading system led to a breadth of policy responses in many countries in the world[20].

[20] FAO. 2021. *Agricultural trade & policy responses during the first wave of the COVID-19 pandemic in 2020*. Rome. https://doi.org/10.4060/cb4553en.

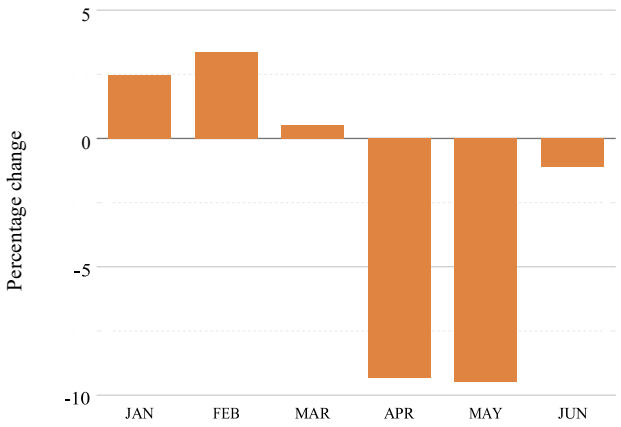
3.1 Short-term effects on pattern of trade

In the first half of 2020, the measures introduced by governments to contain the spread of the virus impaired the global trading system. The patterns of agricultural and food trade suffered short-term effects during this period, which are clearly visible in trade figures for both value (USD) and volume terms.

Percentage change of world agricultural and food import values, January to June 2020 compared to the same month average in 2018/19.



Percentage change in the number of import flows of agricultural and food products, world, January to June 2020 compared to the same month average in 2018/19.



Source: FAO Estimates based on Trade Data Monitor (accessed October 2020).

Besides rising figures at the begging of the year, abrupt trade disruption caused imports to decrease by the end of March. In both April and May, mainly due to policy restrictions and other widespread pandemic-related disruptions, many trading partners experienced discontinuous trade flows of specific commodities, which resulted in a decline of 9% in global volume of imports. On the other hand, if we take a closer look at the impact on trade in value terms, the reduction was far less pronounced in April (-5) and then followed by a greater drop in May (-10%). This could suggest a gradual impact in which weak demand and difficulties in supply chains affected smaller trade links first, while trade of major commodities and between main trading partners were impacted only later[21].

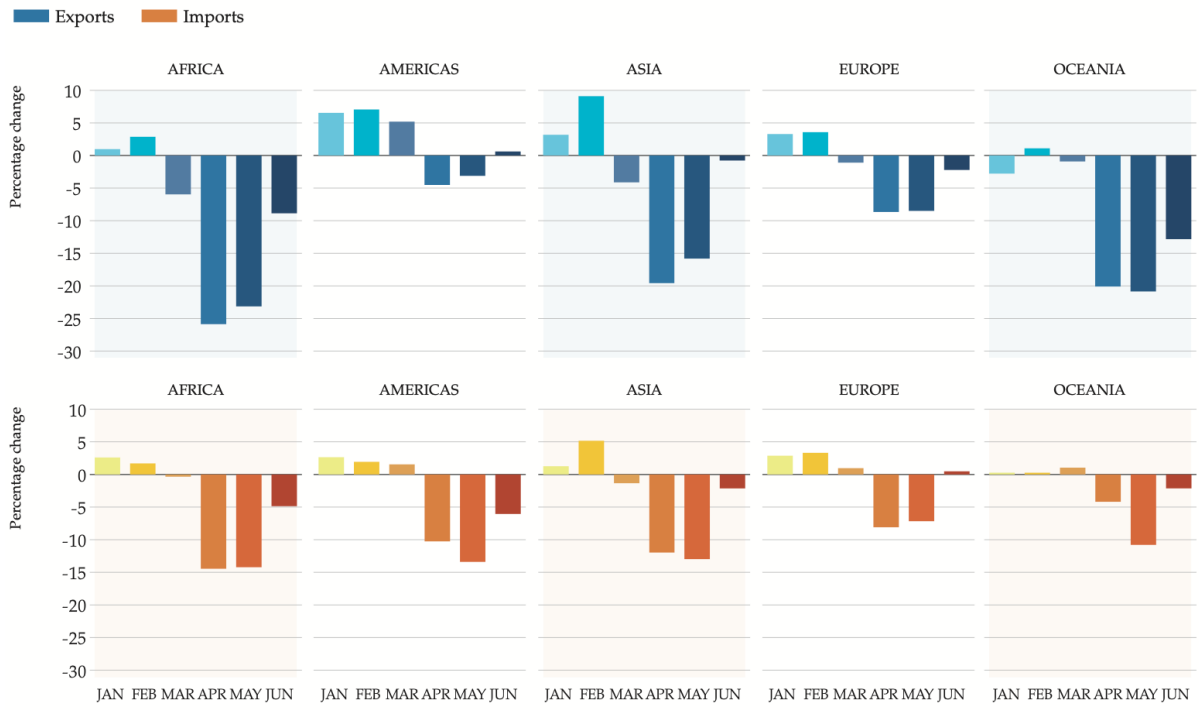
A clear difference in the comparison can be found also in the recovery phase. By June, volume of trade had bounced back to near pre-pandemic levels, while global trade values rebounded up 5% compared to the previous year. Changes in trade values not only reflect changes in quantities, but also

[21] Ibidem

changes in import and export prices. The FAO Food Price Index, a measure of the monthly change in international prices of a basket of globally traded food commodities, moved in parallel with trade values and increased continuously throughout the year reaching a three-year high in 2020 as whole, 3.1% higher than 2019. The boost in the second half of the year was mainly driven by a sharp upturn in the commodity price indices of sugar and vegetable oils, which had suffered the most in the first half.

During the first wave of COVID-19, Agricultural trade was affected worldwide with similar patterns observed at global level. In Europe, Africa, Asia and Oceania trade figures dipped in April and May. African countries were affected the most in both import and export flows. The only exception was in the Americas, a continent with major agricultural exporters, where export figures deviated from the global trend and remained almost untouched, especially in USD terms. For instance, Brazil and Argentina saw increasing values in all their main export commodities such as cereals, meat, oilseed, malts and starches, although the export volume of these products declined. Contrary to this partial positive trend, import values declined in both countries compared to previous years.

Percentage change in the number of export and import flows of agricultural and food products in 2020 compared to the same month average in 2018/19, by region.

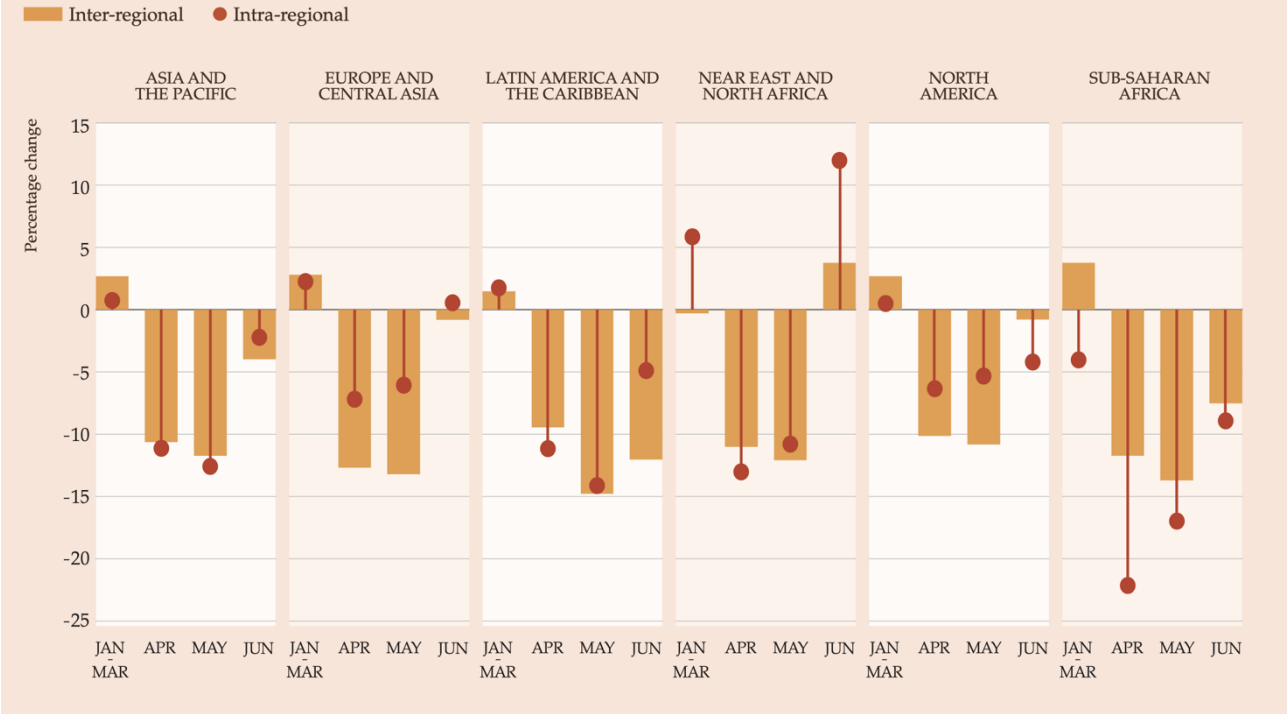


Source: Estimates based on Trade Data Monitor (accessed October 2020).

If we analyze trade patterns within regions, the aggregate trend can mask very different development at a country level. This the case of Africa, where, despite being the most impacted region, countries like Kenya did not show almost any COVID-related pattern. After the imposition of lockdown measures in the country, both imports and exports of food increased, with volume of fruit and tea exports touching a record high in April. However, shipment of Kenyan flowers to European Union dropped severely, reflecting global patterns.

Trade in agricultural and food products was impaired at both intra-regional and inter-regional level. Nevertheless, in regions where countries have historically stronger trade relationship, such as Europe, North America and Central Asia, intra-regional trade proved more resilient than trade with other regions. The opposite happened to countries in sub-Saharan Africa, which have been traditionally more globally oriented in their trade.

Percentage change in intra-regional and inter-regional import flows of agricultural and food products in 2020 compared to the same period average in 2018/19.



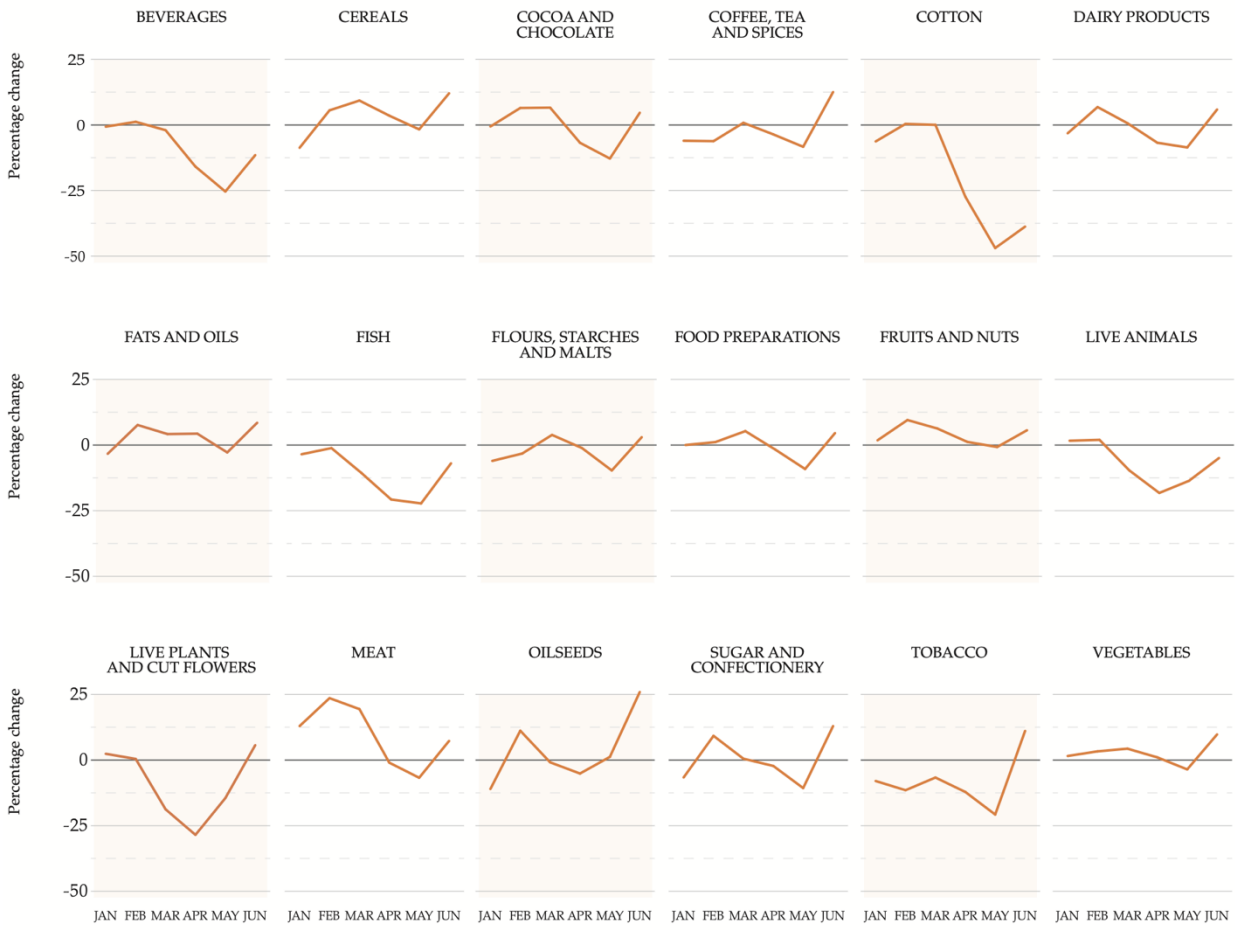
Source: FAO estimates based on Trade Data Monitor (accessed October 2020).

Furthermore, the COVID-19 containment measures had an impact on the diversity of trade in term of trading partners and products. A less diversified bundle of product and markets in agricultural trade can be disruptive for a country. In order for a country to be resilient to supply and demand shocks, a well-diversified range of imports, exports and trading partner is essential. During the first wave of the pandemic, concentration of trade increased, due to fewer products traded and a reduction

in trading partners. Only in the Americas, a larger part of the increasing concentration in exports was caused by an increasing intensification in fewer numbers of remaining trade flows. While in Africa imports and exports became severely less diverse and did not recover by mid-year, Americas, Europe and Oceania experienced slightly more concentrated exports and their diversity of imports recovered to pre-pandemic levels in June 2020.

Besides an overall fall in trade values and flows in April and May 2020, the outbreak impaired the agri-food sector with marked differences at the commodity level. Because of the global rise in demand of staple foodstuff as initial panic-buying started, effects on trade in many major commodities such as cereals, oilseeds, fats as well as foods important for a healthy diet such as fruits, nuts and vegetables remained rather limited, even at the height of trade disruptions in May. Higher-value commodity groups, characterized by income-elastic demand, such as beverages, fish, live animals, and especially non-food commodities (cotton, tobacco, cut flowers, and live plants), were significantly affected because of changes in consumption patterns, disruptions in air freight, and policy restrictions.

Percentage change in global import values of agricultural and food products in 2020 compared to the same month average in 2018/19, by commodity group.



Source: FAO estimates based on Trade Data Monitor (accessed October 2020).

3.2 Policy responses to COVID-19

Considering the large degree of uncertainty around the pandemic's effects on agricultural value chains and on global agri-food markets, many countries applied policy measures with the aim to curb potentially adverse effect on their domestic markets. These policy measures were temporary and can be divided into three main categories: trade restrictions, measures to lower import barriers, and domestic measures to ensure stability of logistics, production, and access to food.

3.2.1 Trade restrictions

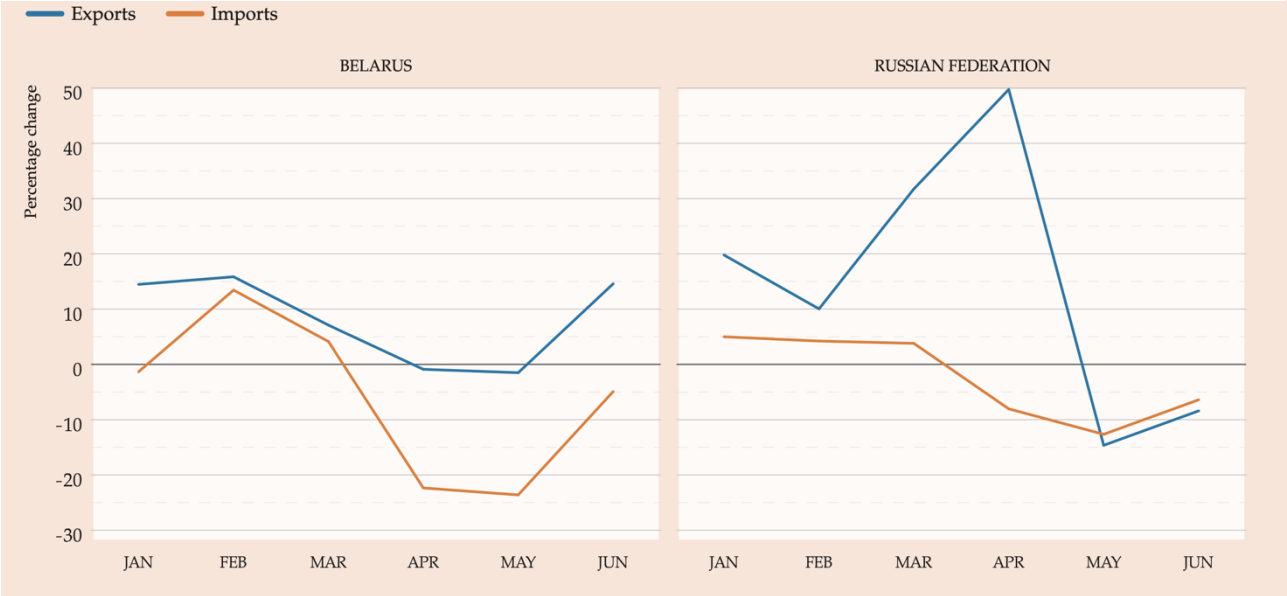
Throughout the spread of the pandemic and facing global food security concerns, the use of export restriction by major exporters can cause huge instabilities in agri-food markets, harming both farmers in exporting countries and consumers in importing countries. This was not the case at the outbreak of the pandemic, when, contrary to what happened in the global food price crisis in 2008, major exporters such as China, India, United states, Argentina, and Ukraine refrained from applying similar measures. As an example, even though an important staple food as rice saw a widespread use of export restriction at the outbreak (in Vietnam, Cambodia and Myanmar), India, United States and others, did not impose such measures and had a stabilizing effect on international markets. Moreover, in Argentina export taxes for maize and wheat flour were lowered from 9% to 5% and 7% respectively.

Despite a global limited use of export restrictions, some other major exporting players put in place short-lived measures during the first months of the pandemic. In particular, The Russian Federation imposed export restrictions for wheat, some flours, and other several products, giving rise to plummeting figures for their exports in May and June. Also agricultural and food imports declined below previous years' averages, despite being slightly above at the beginning of 2020. Similar measures were introduced in Kazakhstan and other countries of the Eurasian Economic Union (EAEU), namely Belarus. Here, both numbers of export and import declined below 2018/19 levels in April and May, with the former ones rebounding in June and conforming to the positive trend recorded at the beginning of the year.

Furthermore, Algeria, Jordan, Kuwait and to a lesser extent Angola temporarily banned exports of all agri-food products. These are countries with high food import dependency ratio, therefore restrictions were introduced on the basis of food security concerns. Several other net importers followed the same path, countries like Kyrgyzstan, North Macedonia, Philippines, Sudan,

Syrian Arab Republic, Mali and noticeably Pakistan, which banned exports of all edible products for fifteen days.

Percentage change in agricultural and food export and import values in selected countries in Europe, January to June 2020 compared to the same month average in 2018/19.



Source: FAO estimates based on Trade Data Monitor (accessed February 2021).

Import restriction were temporary and mainly Sanitary and phytosanitary (SPS)-related. As history teaches as, in case of an infectious disease outbreak, countries will try to contain imports of any product capable of transmitting the disease, notably food products. To some extent this was also the case for the COVID-19 pandemic. Early in the spread of the virus, countries imposed import restrictions, on a narrow range of agri-food products, including live animals, fish, fruits and vegetables especially from China. Many countries adopted a complete ban on imports of these products, while other implemented requirements of certificate proving negative test results for the consignments. To date, there is no evidence that these products can transmit the virus to humans, therefore such measures may be ineffectual in addressing any food safety concerns.

Overall, the use of trade restrictions was limited. Global market uncertainty was not aggravated neither by the impact that restriction by smaller net-importing countries had on regional markets, or by conservative measures introduced by larger nations. High stock-to-use ratios and good production prospects at the beginning of the year, together with an international political commitment to refrain from trade-restricting measures, played an important role in strengthening the capacity of countries to resist to disruptions (buffer capacity) in the global food market and assured food security across the globe.

3.2.2 Measures to lower import barriers

In order to ensure food supply and the smooth flow of agricultural imports, many countries lowered import-restricting measures, including both tariffs and technical regulations, and increased flexibilities and efficiencies in trade-related procedures[22].

Import barriers were lowered through either partial or total suspensions of import tariffs, and in some cases raising tariff-rate quotas (TRQs). In Qatar and South Africa, the tariff suspension was valid for all food products, with the former one exempting imports from the country's usual 5% custom duty and the latter one allowing for importations free of duty and VAT. The majority of countries, mainly net importing, exempted a list of essential food product from import duties with the aim of boosting domestic supplies of these goods. The widespread easing of imports was common across all cereals and vegetable oils, but less used on meat and dairy product (only China and Uzbekistan).

With the intention to foster flexibilities and efficiencies in trade-related procedures and to facilitate imports of critical food items, certain countries also lowered technical barriers to trade (TBT). As a matter of fact, technical regulations on food products, such as food labelling guidelines, standards and content requirements, were temporarily relaxed in many countries, including Japan, Switzerland, and Indonesia. Because of disruptions in certain market operations, these measures were introduces in order to address supply chain impediments, thus ensuring sufficient food availability. For instance, fortification and quality requirements were suspended in Indonesia, where the addition of Premix (Fe, Zn, Vitamin B1, Vitamin B2 and Folic Acid) in wheat flours was exempted in the implementation of their Indonesian National Standard for Wheat Flour.

From a bureaucratic standpoint, countries showed some flexibility in trade procedures. Due to lockdown measures, many operations of government authorities, specifically those responsible to provide any type of certificate or license needed for trading agricultural product, were compromised. For example, China simplified import license renewal and other approval procedures for pesticides, fertilizers, and feed additives. Furthermore, digitalization ramped up in such government procedures. Brazil and Chile implemented the International Plant Protection Convention (IPPC) ePhyto Solution. The ePhyto, short for "electronic phytosanitary certificate", is a tool that transitions paper phytosanitary certificate information into a digital phytosanitary certificate or "ePhyto"[23]. Advances

[22] Ibidem
[23] The International Plant Protection Convention (IPPC) ePhyto Solution https://www.ephytoexchange.org/landing/index.html.

in digitalization were also fostered by the Central European Free Trade Area (CEFTA), which introduced a regional green corridor system at certain border crossings to ensure rapid flow of essential products (including meat and dairy, fruits and vegetables, cereals and products of milling industry, oilseeds, and animal feed)[24].

3.2.3 Domestic measures

Domestically, countries' main interest was to make sure that producers were able to overcome this tough period and that every actor of the agri-food value chain was supported, with the purpose of assuring production and economic access. The main forms of direct policies were support measures to producers and agribusinesses, and to marketing and logistics, with the latter one directed mainly at backing importers and exporters. Moreover, many countries expanded food reserves to ensure sufficient domestic availability, while others implemented ceiling prices and food distribution programs to support consumers.

a. Producers and agribusinesses support measures

Around March, lockdown measures were implemented almost globally and the whole agri-food value chain was hampered. Farm to market deliveries were affected by harvesting labor shortages and transportation disruptions. High-income countries' policies aimed primarily at protecting farm incomes, but also at helping domestic food aid organizations. On the other hand, lower-income countries focused more at protecting smallholders and poor farmers.

Agricultural loans with increased coverage and versatility, together with direct transfers, represented the main forms of producer support measures implemented by countries like Canada, Japan, United States and the European Union. Among lending measures, "Farm Credit Canada" and the "US Crop Insurance program" deferred principal and interest payments for specified periods and provided additional credit options to farmers. At the same time, EU introduced loans or guarantees at favorable conditions to cover operational costs. Certain producers were eligible to direct transfers, in the European Union through lump sum payments and rural development payments, and mainly in Japan, where tax relief and cash allowances were introduced for those whose sales revenues declined by 30%, as part of its "Emergency Economic Package".

[24] FAO. 2021. *Agricultural trade & policy responses during the first wave of the COVID-19 pandemic in 2020*. Rome. https://doi.org/10.4060/cb4553en.

In addition, developed countries implemented food purchases and introduced subsidies for domestic food aid. The main products purchased from farmers were fruit and vegetable, such as those redistributed to non-profit organization in the US, under the "Farmers to Families Food Box Program". In Japan subsidies were available for those producers involved in the donation, or processing, of certain product destinated to food aid. Furthermore, United Kingdom and Northern Ireland provided producers subsidies to dairy farmers by enacting a scheme to cover 70% of their lost income for the months of April and May, while China addressed animal feed shortages suppling the Hubei province with 8000 tons of soybean meal.

Farmer in developing countries were assisted either in the form of input subsidies, for example through the distribution of seeds among affected farmers in Bangladesh, or through direct transfers, just as in Indonesia, where cash payments were made to unprivileged farmers[25].

b. Logistics and marketing support measures

Airfreight assistance was the main form of logistic support due to the widespread grounding of airlines globally. The export of perishable products, typically transported by air, were supported in the Australian International Freight Assistance Mechanism, by meeting part of their airfreight costs, and in New Zealand, where, with a different approach, airfreight was kept affordable through finances to carriers. Besides a boost in fruit exports due to a bumper harvest of kiwi in New Zealand, both countries' exports of perishables remained around average levels, except for fishery products.

E-commerce and domestic marketing reforms were particularly popular in middle-income countries. A lack of farm-to-market linkages, together with an increasing urban demand during lockdowns, called for a need of launching or strengthening public e-commerce platforms. For instance, The Turkish government established an online marketplace where farmer, agribusinesses and buyers are able to transact directly with each other. The "e-NAM", a similar platform already present in India since 2016, was enhanced through agricultural marketing reforms aimed at facilitating inter-state trade.

c. Expansion of food reserves, stock release and price controls

As mentioned before, food reserves contributed to the resilience and confidence in agri-food markets. Prior to 2020, most commodities experienced high stock-to-use ratios for several years, contrary to what happened before the financial crisis in 2008. However, nowadays food stocks are

[25] Ibidem

highly concentrated between few major countries across the globe, such that China alone accounts for 46% of global cereal stocks today. Despite the stabilizing effect that large stockpiles can have on international markets in the event of shocks, the fact that huge amounts are located in just one country can turn out to be very counterproductive to some smaller net importing countries. The reason being that China's strong food consumption trends can imply that these stocks may be less responsive to global price signals, and in case of disruptions on its domestic market, such as those caused by the COVID-19 pandemic, can weaken the buffer capacity of the global food market[26]. Nonetheless, despite holding large reserves of cereals, China increased state purchases of rice by 350000 tons in 2020.

Stocks-to-use ratios for cereals (%).

Source: Data underlying FAO (2020a).

On these grounds, countries like Egypt, Bangladesh, Kyrgyzstan, Philippines and El Salvador built up strategic reserves of cereals. Wheat procurement target was increased by 50% in Bangladesh, and Egypt approved a financing agreement for the purchase of essential commodities including wheat. Kyrgyzstan expanded cereal purchase operation both for market emergency stocks and price stabilization, while 50000 tons of maize were purchased by El Salvador to guarantee supplies during

[26] Ibidem

COVID-19. Meanwhile, an import plan of 300000 tons was implemented in Philippines, consisting of purchases on a government-to-government basis with ASEAN (Association of Southeast Asian Nations) trading partners.

For the purpose of stabilizing prices in national markets and increasing availability, China, and other countries with considerable stockholding operations, including India and Nigeria, expanded food distribution programs by releasing stocks from their reserves. China saw an increase in cereal stock releases of about 43% (10.14 million tons) compared to 2019, and announced the sale of approximately 7 million tons of maize by May, while 70000 tons of maize were distributed to certain provinces in Nigeria to address shortages. The Public distribution system in India saw increasing monthly quota of subsidized food grains and also free monthly rations of wheat for the vulnerable.

Ceiling prices were by far the most used market-based domestic measure to support consumers. Prior to the COVID-19 pandemic, control on retail price may have been used but commodities were never subjects to this type of measure. With the aim of preventing hoarding in the face of market uncertainty, price control measures were uncommonly used on a broad range of commodities, and extensively implemented in Central Asia, South-eastern Asia, Latin America and the Caribbean, and in sub-Saharan Africa.

Price control operations were popular across many commodity groups. Staple foods, such cereals and mostly rice, being a dominant portion of a standard diet in many regions of the world, were the main subject of these measures. Indonesia, El Salvador, and Philippines put in place ceiling prices for local and imported rice, while Sri Lanka lowered maximum retail price for steamed Nadu rice, together with white and red raw rice. Price ceiling were implemented also on maize, and to a lesser extent on wheat and wheat flour. Barbados announced a list of 48 protected products including corn meal flour. The same happened also in Rwanda, where prices of maize and other food stuff could not be set above prescribed levels. Meanwhile, Kazakhstan fixed ceiling on prices of several socially significant food products including wheat flour.

Moreover, Argentina established price ceilings on various commodities but especially on milk and derived food products, whose consumer price would not go up thanks to compensations provided to sellers within the country. Meat and dairy were also subject to price controls in Cambodia, where a task force was created to monitor daily demand and supply of strategic goods in order to prevent abrupt price increases. Similar measures were introduced for vegetable oils, with cooking oil price being regulated the most, mainly in Thailand, Indonesia and Myanmar.

Chapter IV

THE ITALIAN AGRI-FOOD SECTOR

On 21st February 2020, Italy was hit by the spread of the virus with the first 16 confirmed cases and the early deaths reported in the following days. In early March, many municipalities were isolated and the movement restrictive measures were soon extended to the whole national territory, with the official presidential decree "IoRestoaCasa" published on 11th March. All the activities not necessary for the Italian production chain were closed, such as schools, museum, cinemas, sport centers and especially those belonging to the Horeca industry (Hotellerie-Restaurant-Café). Here the first reaction by consumers was to immediately engage in stock-piling foodstuff, indeed the agri-food sector proved to be relatively less affected by the economic storm at the outbreak, with the exception of floriculture and fishing. By April, the effects of the gradual closure of the Horeca channels became domestically tangible, followed by bearish forecasts for agricultural exports and by the implementation of more stringent measures, extended earlier until 13th April, with a new Ministerial Decree, and thereafter until 3rd May.

During this first phase, the more evident aspects were the boom of the delivery sector (+160%) and of small grocery stores, that were able to quickly organize their "home delivery" services, together with the ability of transport and logistics companies to ensure their full operations despite the organizational issues encountered in the first day of the crisis[27]. In contrast with the positive trend in retail sales, characterized by the tendency to buy conservable products against perishables and higher-value products, the agri-food sector experienced a drop in turnover of 40% (around 34 billion euros), generated by the complete stoppage of the Horeca channel (-93%). Much of the disruption to the supply chain appeared to occur at the level of farms, factories and distribution centers, where labor shortages significantly slowed operations and created bottlenecks. Foreign labor, in the production of fruit and vegetables, was particularly hit by the closure of the borders and the shortages affected the whole European Union, with and estimated loss of one million seasonal workers and disastrous consequences on crops. Overall, demand was mainly affected by changes in consumption

[27] ISMEA, *Emergenza COVID–19 Secondo rapporto sulla domanda e l'offerta dei prodotti alimentari nelle prime settimane di diffusione del virus*. April 2020, https://www.ismeamercati.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/10460.

patterns and modalities, while, on the supply side, transport and distribution phases of the agri-food chain showed more resilience compared to the production phases[28].

On the export side, the impact was extremely different across both commodity sectors and trading partners in the first half of the year. Sectors with major tendencies for exportation were the most impacted, especially those with above average shares of exported turnover out of the total, which amount to approximatively 18% of the Italian agri-food industry. The pandemic spread with different timing in different countries, and European trading partners experienced the more generalized decline in demand for Italian products, particularly Germany, Spain and the Netherlands. A more heterogenous situation was observed at the extra-European level, where China, achieved positive trends for agricultural products, foodstuff, drinks and tobacco, followed by Japan and Turkey, on the same path but just for agricultural products. On the other hand, United States and India recorded a significant decline of imports in agricultural products (-35% and -72% respectively). Nonetheless, in the first semester, despite a drop recorded in the months of March and April, exports of food products and agricultural commodities increased respectively by 4% and 1%, compared to 2019.

From 18th May, with the epidemic curve on the downside, all retail trade activities, restaurants and bars reopened, and started a phase of gradual easing of containment measures, further extended on 15th June. The economic activity and foreign trade started to increase again, and the second and third semester represented a breath of oxygen for the whole Italian economy. In October, since the epidemic curve was in an upward phase, Italy and many other countries were forced to impose more stringent containment measures, signing the end of the previous recovery phase.

At the end of 2020, the agri-food sector proved its resilience against all disruptions and performed better than any other economic sector. Nevertheless, the closure and then the slowdown of the Horeca channel, in Italy and abroad, has impacted differently various agri-food products, depending on the importance that it has in its final consumption. Indeed, products like wine and fish were affected more than staple foods, such as pasta, where the worldwide upsurge of sales from the retail chains (GDO) has compensated the fall in sales through the Horeca channel. The Made-in-Italy agri-food exports have also suffered a slowdown compared to the growth experienced in recent years,

[28]Coluccia, B., Agnusdei, G.P., Miglietta, P.P. & De Leo, F. 2021. *Effects of COVID-19 on the Italian agri-food supply and value chains.* https://doi.org/10.1016/j.foodcont.2020.107839.

from +7% in 2019 to +1,7% in 2020[29]. The changes in Italian trade patterns occurred in 2020 are further analyzed below.

4.1 Foreign trade and Domestic measures

In 2020, the spread of the COVID-19 pandemic and the implementation of containment measures at a global level had a negative impact on Italian exports of goods and services, down 9.7% compared to the previous year. Agri- food products represent an exception because, even if the sector saw a slowdown in growth, the variation in exports remained still positive (+1,7%) compared to 2019, with figures around 46 billion euros. This performance confirms the positive trend that the sector experienced in the last ten years, namely the growth in weight of agri-food products on total exports of goods and services went from 8% in 2011 to 10.6% in 2020.

On the other side of trade, imports registered a decline compared to 2019 (-5.1%), resulted from a sharp fall of 6.6% in the importation of food products and a less marked decline of 2% in agricultural products. This result can be largely traced back to the drop in imports of meat and especially fishery products, which together represents 25% of total imports and have suffered from the closure of Horeca channels.

As a consequence of the greater progressive growth of exportations compared to trade inflows witnessed since 2015, together with this last sharp drop in imports, 2020 closed with a positive trade balance in agri-food products for the first time in ten years. This outstanding achievement, a surplus of 3.1 billion euros, is exclusively attributed to the food industry performance, that alone accounts for 85% of agricultural exports. Indeed, at the same time, trade in agricultural commodities maintained a deficit of about 7.5 billion euros, reflecting the huge dependency that many sectors of the Italian food industry have on imports of raw materials[30].

The principal target market for Italian agricultural products is the European Union, which accounts for 29.3 billion euros and around 64% of national exports. The biggest country of destination is Germany (16.8%) followed by the United States (10.6%). Exports towards EU countries (+1.4%)

[29] ISMEA, *Emergenza COVID–19 Quarto rapporto sulla domanda e l'offerta dei prodotti alimentari nelle prime settimane di diffusione del virus.* February 2021, https://www.ismeamercati.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/11273.
[30] ISMEA, *Scambi con l'estero, La bilancia commerciale dell'agroalimentare italiano nel 2020.* March 2021, https://www.ismeamercati.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/11345.

recorded positive growth rates, especially in Germany (+7.2), Poland (+5.4%), Belgium (+3.8%), and with the exception of Spain (-7.6%), where a downturn was registered.

In Germany, where the value of exports reached 7.8 billion euros, the compartment that increased more on a yearly basis across the whole agri-food industry was “cereals and derivatives”, primarily due to boom experienced in pasta exports, with a growth around +16% and a value of 475 million euros. German (+9.3%) and Belgian (+11.9%) demand for “fresh and processed fruit” has increased greatly, with the former one boosted by the request of Italian apples (+32.6%) and table grape (+22.5%), and the latter one by imports of Italian kiwi (+27.9%) and table grape (+13.2%). Despite a general fall in exports of dairy products, demand of Italian fresh cheeses has risen in both countries, while in Poland the only compartment that showed significant dynamics is that of “manufactured tobacco”, whose export figures increased astonishingly from 1.2 million euros in 2019 to 41 million euros in 2020.

Export towards extra-EU countries increased more (+4.4%), recording figures of about 16.8 billion euros. A great share of this rise is owed to the exceptional expansion of exports in Ukraine (+32.4%), where, contrarily to what happened to almost all Italian trading partners, demand for Italian products of the “wine and musts” and “milk and derivatives” compartments almost doubled. Thanks to the agreement protocol signed by the Italian Minister of Health and by the General Admiration of Customs of People's Republic of China, Chinese imports of Italian meat reached 51 million euros and represented the main agri-food exports toward the country, bearing in mind that the total hovers around 83.8 million euros. Moreover, the expansion of exports towards the USA was related to the increase in demand for Italian peeled and pureed tomatoes (+19.8%), and mainly by the boost in request for pasta (+40%), whose exports reached 488 million euros at the end of 2020.

Overall, data for exports at the commodity level highlight different patterns across several compartments. “Cereals and derivatives” (+6.9%), “fresh and processed vegetables” (+5.2%), “fresh and processed fruits” (+3.4%), "oils and fats” (+4.9%) and “industrial crops” (+14%) registered an expansion of exports, while “wines and musts” (-2.3%) and “milk and derivatives” (-2.1%) recorded a contraction, with the exception of some countries for the former one and the export of fresh cheese (+3%) for the latter one, where mature cheese exports were impacted the most. As mentioned earlier the most impacted compartments were beverages (-3.8%), fishery (-3.5%) and meat (-2.8%) products,

and to a far lesser extent floriculture (-0.6%), that recovered after initial disruption in the early lockdown[31].

The leading product for Italian exportations in 2020 was pasta. During the COVID-19 pandemic, especially at the outbreak with the increase in stock-piling behaviors, all consumers around the world searched for staple foods that could be stored, such as pasta and many other products. Therefore, huge sales of this product by the large retail chains were recorded globally and resulted in figures of Italian pasta exports that reached 3.1 billion euros (+15.5%). Of these, around 2.1 billion euros are represented by semolina pasta (100% durum-wheat), whose exports increased by 19.8% in 2020 compared to the previous year.

In the first semester of the year, a set of domestic measures were introduced both by the national legislator and by the European Union, with the aim of supporting producers impacted by the COVID-19 pandemic and specifically devolved at backing businesses' liquidity and protecting their income.

As hinted in the previous chapter, the EU measures were mainly concentrated at supporting producers and agribusinesses through the enactment, in March 2020, of the State Aid Temporary Framework (TF). Over the year, other four amendments have followed, which basically allowed state members to provide aid to businesses in three different forms:

- Direct transfers
- Guarantees
- Loans at favorable conditions

Moreover, guarantees and any type of funding had several constrains, namely a 25% limit over turnover or double personnel expenses, and anyway within a total of 5 million euros and a duration of maximum six years. The maximum amount permissible was 800.000 euros for food processing businesses, 100.000 for agribusinesses and 120.000 for fishery and aquaculture businesses. Nationally, the government implemented concretely a series of measures by referring to the TF, and with the financial instruments administered by ISMEA. In the fist place, with the decree "cura Italia" on 17th March 2020, and successively with other five decrees, with the last one being the decree "decreto-legge Agosto".

[31] Ibidem

Conclusions

The COVID- 19 pandemic affected global economy like no other crisis in recent times, taking the world by storm for its rapidity and broad spectrum. Containment measures had terrific effects on the supply side of the economy, which in turn affected even more consumers and resulted in much severe contraction of output than in any other crisis.

Nevertheless, in 2020, despite an early period of uncertainty, pessimistic forecasts and negative expectations, international trade survived pretty well, thanks to a global political commitment. Strong fiscal and monetary policy were deployed rapidly, globally and on a huge scale, and many governments responded by implementing measures to lower import barriers and foster international trade. Trade restrictions were limited to a short period after the outbreak, and trade recoveries around the world were extremely fast and looked much like V-shaped recoveries.

In Agri-food markets, the efforts of governments and sector stakeholders worldwide to keep trade open and flowing smoothly have contributed to a remarkably resilient performance. Overall, effects on global trade in food and agriculture remained limited to short-term disruptions at the very beginning of the pandemic. While disruptions of global trade in basic foods such as cereals, oilseeds, fruits, and vegetables were minimal, trade in products affected by shifts in consumption patterns and non-food commodities declined more sharply.

In Italy, the most affected compartments were beverages, fish and meat industries, nevertheless, the growth of 1.7% experienced by trade in agri-food products represents an exception and confirms the renown of the made-in-Italy. This performance, together with the agri-food trade surplus of 2020, confirms the positive trend that the sector experienced in the last ten years, however, masks the huge dependency that many sectors of the Italian food industry have on imports of raw materials. This is the case for the Pasta industry, where, despite the recorded boom in exports and the increasing trend in sales of pasta 100% made in Italy (100% from Italian durum-wheat), the production relies heavily on imports of durum-wheat, which accounted for about 43% of inputs used by the pastary transformation in 2020.

Finally, early positive figures for merchandise trade in the first two quarters of 2021, driven by a strong export performance of East Asian countries, together with confident prospects for vaccines production and distribution, preannounce a strong recovery of total trade for the rest of the year.

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