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FOOD SECURITY–TRADE NEXUS IN TIMES OF COVID-19 PANDEMIC

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ABSTRACT

Despite the increase in agri-food trade, food insecurity is still a pressing challenge in many world regions. This is an indicator of the multifaceted relationship between trade and food security. Moreover, it is not clear how the outbreak of COVID-19 affected this relation. In this context, this article explores the outbreak's impacts on food security-trade nexus starting from an analysis of the relations between agri-food trade and the four dimensions of food security (viz. availability, access, utilization, stability), and then by exploring how the pandemic has changed this relationship. It draws upon a systematic review of documents indexed in Scopus carried out in October 2020. Results show the central role of trade in ensuring food security and highlight that international trade has been disrupted due to border closures and the indirect consequences of the pandemic containment policies imposed on the industrial business sectors all over the world. Furthermore, we highlight that the current agricultural trade framework, defined by import dependencies and structural fragility, has exacerbated the outbreak's consequences on food security. Food-related impacts of the pandemic vary not only from a country to another – depending, among others, on the epidemiological situation – but also among socio-economic groups; under these circumstances, agri-food trade disruption has struck heavily on low- and middle-income countries. We underline the need for a more sustainable and regional model of international trade to overcome the weaknesses of the 'business as usual' model and ensure food security for all.

Keywords: *COVID-19, Food security, Food trade, Food import, Food export, Markets.*

INTRODUCTION

The world population is expected to reach 8.5 billion in 2030, 9.7 billion in 2050 and 10.9 billion in 2100 (Gillson and Fouad 2014; United Nations Department of Economic and Social Affairs Population Division 2019). At the same time, according to the current trends at the global level, demand for food will increase by 100–110% by 2050 (Cadillo-Benalcazar et al. 2020; Garnett 2013; Tilman et al. 2011). Therefore, food security remains among the most pressing development issues of our time. However, over the last decades, the scientific and political debate on the most effective ways to attain food security has polarized alongside two main visions: one which supposes food security to be best achieved through self-sufficiency or sustainable food systems, and one which supposes the former could be achieved through trade (Otero et al. 2013). Specifically, trade and markets have been seen either as a "threat" or as an "opportunity" (Borsellino et al. 2020). Advocates of "trade as an opportunity" claim that international food trade growth has helped many countries in reaching food security, by its positive impact on the four dimensions of food security (Batt 2019; Borsellino et al. 2020; D'Odorico et al. 2019; Dithmer and Abdulai 2017; Geyik et al. 2020; Smith and Glauber 2020; Sun et al. 2020). On the other hand, contestants of this narrative point out that food security achieved through trade is vulnerable to external shocks (Barlow et al. 2020; Distefano et al. 2018; Taghizadeh-Hesary et al. 2019) and is usually based on fragile balances and/or unsustainable situations (Beltran-Pea et al. 2020; Borsellino et al. 2020; Capitanio et al. 2020; Kremen et al. 2012; Sun et al. 2018; Valenzuela 2016).

The issue became increasingly central in recent years for two main reasons: the growing importance of agricultural trade for national food supplies (MacDonald et al. 2015), which has become increasingly interconnected and put under pressure to support the growing demand for food (Stokeld et al. 2020; Suweis et al. 2015); the emergence of COVID-19 pandemic and its consequences on social and economic life worldwide, which have shattered the core sustaining pillars of modern world economies (Ibn-Mohammed et al. 2021) and international trade. The debate has therefore been further exacerbated between those who argued that trade can alleviate the pandemic's harmful consequences for food security, and those who point to international trade as a cause, not a solution, of the food insecurity problems that emerged during the pandemic.

In order to understand the impacts of COVID-19 on agri-food trade, we will use the standard conceptual framework of food security, which encompasses the four traditional dimensions (i.e. availability, access, utilisation, stability). For people to be food secure, food must be both consistently available and accessible in sufficient quantities and diversity, and households must be able to utilize (store, cook, prepare and share) the food in a way that has a positive nutritional impact; these three dimensions (viz. availability, access and utilisation) should also be stable over time (FAO 2008; Global Network Against Food Crises 2020). Using this framework, we explore the linkages between trade and food security and subsequently analyse how they have been affected by the COVID-19 pandemic.

MATERIALS AND METHODS

The paper draws upon secondary data of scholarly literature as well as data from grey literature and databases. A search was performed on 30 October 2020 using Elsevier - Scopus database (Table 1). The search included all the documents that were indexed by that date, without defining any time range or excluding any document based on publication date. Furthermore, no geographical restrictions were posed. The initial search on the food security-trade nexus yielded 903 results. Following the review of titles and the screening of abstracts and keywords used, 823 documents were excluded, as they did not deal with the relationship between food security and trade. The search yielded more results when searching for literature written before the COVID-19 pandemic, focused on the linkages between food security and international trade although in recent months the number of articles and review papers concerning the consequences of COVID-19 on various aspects of social and economic life has been constantly increasing. There are also more and more articles that analyse in detail the impact of the pandemic in individual countries. However, the impact of the pandemic on trade continues to be a poorly covered topic, which this article will try to address. Grey literature included reports and other publications by United Nations (UN), United Nations Conference on Trade and Development (UNCTAD), Global Network Against Food Crises, and the Food and Agriculture Organization of the United Nations (FAO).

RESULTS AND DISCUSSION

Over the last decades, the debate on food security has polarized, and consequently, two main narratives on trade and markets have emerged viz. 'trade as an opportunity' and 'trade as a threat' (Borsellino et al. 2020). Therefore, trade has been regarded as an excellent tool for achieving food security or as a cause of food insecurity. The supporters of the 'trade as an opportunity' narrative call for trade openness as a means to enhance market efficiencies and to reduce distortions; in this view, the more trade is open, the more food is produced and flows between countries, allowing more and more people to be food secure (Borsellino et al. 2020). The core tenet is that on average, trade openness does have a positive and statistically significant net impact on food security (Dithmer and Abdulai 2017; Fusco et al. 2020; Petetin 2020). More trade means higher food supply via direct (e.g., imports of food) or indirect means (e.g., more efficient use of productive inputs thanks to the trade of intermediate inputs as seeds, machinery, etc.) (Borsellino et al. 2020; Dithmer and Abdulai 2017; Porfirio et al. 2018; Porkka et al. 2017; Svanidze et al. 2019), a positive effect on prices, productive inputs availability, economic growth, household incomes and employment (Dithmer and Abdulai 2017; Savary et al. 2020) a higher availability of macronutrients in low-income countries (Traverso and Schiavo 2020) and improvements in dietary diversity (Dithmer and Abdulai 2017) and finally, by reducing distortions in supply/demand balance and by diversifying supply sources, more trade can also contribute to reducing price fluctuations and volatility (Borsellino et al. 2020;

Dithmer and Abdulai 2017; Ly et al. 2020; Martin 2019) and stabilizing prices (Bren D'Amour et al. 2016; Dorosh 2001).

Table 1. Summary of literature searches carried out on Scopus

Search theme	**Search string**	**Number of records identified through the search**	**Number of selected records**
Linkages between food security and trade	*("food security" OR "food insecurity" OR "malnutrition") AND ("trade" OR "import" OR "export") AND (agri* OR agro OR food)*	903	89
Impacts of COVID-19 on food security - trade nexus	*"COVID-19" OR coronavirus OR "SARS-CoV-2"*	89	14

However, the supporters of the 'trade as a threat' narrative have a critical opinion towards the market and point out that international trade and agro-markets are actually a cause of food insecurity, especially in low-income countries (Asche et al. 2015; Borsellino et al. 2020; Oteros-Rozas et al. 2019). In general, the supporters of 'food sovereignty' have a critical stand towards markets and call for communities to have higher control of their food systems (Borsellino et al. 2020), in order to define their own agriculture, food and land use policies, which are ecologically, socially, economically and culturally appropriate to their unique circumstances (NGO/CSO Forum for Food Sovereignty 2020). The supporters of more sustainable food systems also claim that should the current food systems continue to exist and operate in a 'business as usual' mode, climate change and other existential threats will severely undermine the world capacity to secure food to the global population (Beltran-Pea et al. 2020). Proponents of this narrative claim that food availability is actually influenced by the actual capital available, and thus low-income countries can have lower access to agri-trade (Baer-Nawrocka and Sadowski 2019; Barlow et al. 2020). Indeed, trade can show a contradictory consequence: international agri-food trade can contribute to increasing social inequality in the form of food insecurity by facilitating food being exported/traded away from the hungry (Oteros-Rozas et al. 2019), thus reducing food access for the poorest sections of the population.

Trade can also impact domestic access to food by influencing food affordability, especially for the most vulnerable sections of the population (Arment 2020; Barlow et al. 2020; Capitanio et al. 2020; Tanyeri-Abur 2015). As for food utilization, globalization and internationalization of food markets contributed to the standardization and homogenization of dietary patterns (D'Odorico et al. 2018; Otero et al. 2013) and the diffusion of some practices that might be detrimental to

health (Albert et al. 2020; Borsellino et al. 2020; Qaim 2017). Lastly, the real problem from this perspective is when it comes to stability; several scholars point out that trade has led to a worldwide import dependency (Benton 2019) and the more countries rely on imports to sustain their food demand, the more the global food system loses resilience and becomes unstable and prone to shocks (Suweis et al. 2015). Food dependency leads to a dangerous situation: the effects of local production shocks can propagate in the international food trade network (Heslin et al. 2020). Climate change, political unrest and other production shocks are likely to further aggravate the situation (Bren D'Amour et al. 2016; Heslin et al. 2020).

The COVID-19 pandemic is another stark example of an external shock that has propagated in the international food trade network. The assumptions about the negative impact of trade on global food security have found sad confirmation in the consequences of the pandemic. In order to contain the outbreak, local and national governments have introduced a wide set of policies, like lockdowns, social distancing and movement restrictions, which impacted adversely international trade. The consequences of the reduced volumes of international trade on food security have been many: food availability has generally declined, due to labour shortages and losses (Stephens et al. 2020); shortage of production inputs (seeds, fertilizers, pesticides, machinery, etc.) (Devereux et al. 2020; Seleiman et al. 2020) and food loss due to the inability to transport products from the fields to points of distribution and falling consumer demand (Pérez-Escamilla et al. 2020; United Nations Secretary General & United Nations Sustainable Development Group 2020). Regarding access to food, the pandemic caused physical barriers (due to closure of informal food outlets, entry quotas and social distancing inside and outside the shops, panic buying, hoarding behaviours, etc.) (Bakalis et al. 2020; Galanakis 2020; Lazzerini and Putoto 2020). Economic access was also disrupted: an increase in food prices and loss of income due to economic recession undermined the purchasing power of the poorest sections of the population (Akter 2020; Galanakis 2020). Alongside these direct effects on people's livelihoods, COVID-19 also has meant the loss of several social measures to fight food insecurity (i.e. school meals, family/grandparents) (Altieri and Nicholls 2020; Bakalis et al. 2020; Patrick et al. 2020; Rippin et al. 2020). With limited purchasing power, families had to choose less elaborate or cheaper foods, and staple and simple food utilization rose (Bakalis et al. 2020; Pérez-Escamilla et al. 2020). The movement restrictions and resort to poorly nutritious foods adversely affected general health, with an increase in the incidence and risk of non-communicable diseases and obesity (Abbas et al. 2020; Béné 2020; Devereux et al. 2020; Jayawardena and Misra 2020; Rippin et al. 2020). Stability is affected by COVID-19-related prohibitions (Devereux et al. 2020) and their effects on supply chains, especially in developing countries (Erokhin and Gao 2020).

We can now trace links between food security and trade in times of COVID-19. A substantial number of countries are dependent on imports to meet their domestic food demand; this situation gave rise to huge agricultural flows, which contribute to making the world increasingly interconnected and increasingly vulnerable to

systemic failures and extreme events (Nesme et al. 2016). The COVID-19 pandemic, by affecting both domestic food producers and international supply chains, led food supply and distribution to be disrupted globally (Erokhin and Gao 2020). Border closures and trade restrictions jeopardized imports of valuable intermediate production inputs (i.e. fertilizers, seeds, machinery) reducing food production and thus availability (Nesme et al. 2016; Seleiman et al. 2020). This shock in the food supply reverberated in the food access dimension: less food available meant higher global food prices (Savary et al. 2020), which led to a purchasing power downgrade of the population and also undermined the capacity to produce and distribute food (Erokhin and Gao 2020; Woertz 2020). As food supply chains were stretched, production, transportation and consumption fell sharply (Hossain 2020); and household income was affected too (Fontan Sers and Mughal 2020). The lockdown of fresh food markets in many countries has changed the eating habits and diets of many individuals (Devereux et al. 2020; Heck et al. 2020; Roberton et al. 2020; Yaya et al. 2020).

However, the real issue arises when it comes to the role of trade in ensuring food security stability. In a report entitled *Impact of COVID-19 Pandemic on Trade and Development*, UNCTAD (2020) states that "*international trade has been an important vector by which the pandemic was transmitted, creating a global economic shock that has reverberated around the world*". In an already 'prone-to-shock' global food system, COVID-19 was the ultimate shock that heavily disrupted food security stability, as it was based on a heavy reliance on complex supply chains, imported food, and just-in-time delivery (Ibn-Mohammed et al. 2021; Pérez-Escamilla et al. 2020) Moreover, the zoonotic origin of the novel coronavirus highlights the structural inequality of the current trade structure, often referred as 'consumption – degradation paradox', which posits that more-developed countries externalize or displace their consumption-based costs to less developed countries through inequitable specializations in production and trade (Rice 2007), and thus cause impoverished rural populations to often be directly involved in the first instances of zoonotic spillover, which, in turn, risk to affect the whole trade system, as it has happened for the COVID-19 pandemic (Austin 2021). Therefore, the pandemic has remarked that a complete liberalization of agriculture is not a panacea for the global food system problems (Baer-Nawrocka and Sadowski 2019). Markets alone cannot guarantee food security, and only by improving agricultural markets functioning and governance, their inclusiveness and by carefully balancing elements of local capacity and self-sufficiency, and open and competitive world markets, food and nutrition security can be achieved for all (Margulis 2012; Mrdalj and El Bilali 2019).

COVID-19 pandemic has proven that global food systems and agricultural trade must evolve into more resilient or efficient ones, which could provide food and nutrition security to all in all plausible conditions (Kahiluoto 2020). Indeed, during the pandemic, the response of some countries indicates that different approaches, distant from the current narrative on trade, can mitigate the negative effects of an external shock, such as the current pandemic. In Singapore, a 'resilient' approach

to food importation has proven sound: diverse sources of imports from around the world have provided options to ensure food imports from alternative, geographically-spread sources (Teng 2020) and, at the same time, governmental investments were made to boost domestic food production (Teng 2020). In the Pacific, regional production boosting and intraregional trade have been proposed as a way to overcome import dependency and foster transition toward a more resilient food supply chain (Farrell et al. 2020). Transition to more circular and self-reliant systems has also been identified as a way to cope with international supply disruptions also in the case of Bangladesh response to COVID-19 (Amjath-Babu et al. 2020); although it won't be quickly and is likely to be only a partial solution. There are also other ways to cope with food insecurity. For example, Cabo Verde's experience highlights that if a government adopts legal and operative frameworks to increase domestic food production, there could be a positive and statistically significant correlation between government expenditure and agriculture production growth.

CONCLUSIONS

Food security is shaped, among others, by trade policies. International trade is considered either instrumental in achieving food security or an element of risk that threatens food security. The main criticism addressed to trade is that it promotes heavy import dependencies between different countries, often at the expense of low-middle income countries. The COVID-19 pandemic has highlighted the fact that the current highly interconnected and centralized global food system is extremely fragile to external shocks, which can affect all the dimensions of food security. Therefore, it is time to rethink the way we trade and recognize that a system based on fragile connections is unsustainable in the long run. The coronavirus crisis poses a challenge, but also a chance to revisit and redesign the relationship between trade and food security. Trade per se is not the problem, but it should be regulated in order to promote a more resilient and inclusive food system. Regional trade could reduce the geographical dispersion that stretches supply chains and creates circular economies that could be easier to control and more conveniently provide for the goods and needs of people. Domestic production should also be enhanced, in order to reduce import dependency; however, in doing so, countries should avoid the development of unsustainable food systems, as they simply postpone problems like soil degradation, biodiversity loss and others. Furthermore, governments should provide a legal framework for promoting green logistics and reducing food loss to incentivize local production. To put it simply, the world must adopt a more resilient trade system; structures that can sustain local shocks without worsening them into global ones. The global supply chain disruption is indicative of this imperative. Even though the topic is increasingly being covered, there is also a need for focused studies, because each country has its own trade nexus and there are many ways in which countries have reacted to the virus outbreak, although there are some common consequences. It would be

beneficial for policymakers and scholars to acquire best practices implemented by governments in order to attain food security with more sustainable trade nexus.

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