COVID-19 Impact on the Agriculture Sector and the Power of Clusters. Romania Case Study

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Abstract

This paper yields current understandings about the impact of COVID-19 on overall Romanian' exports, focusing on the agricultural sector. Up to the latest data, the value of exports registers an overall downturn in 2020. Notwithstanding, the agriculture sector seems to maintain 2019 values or even register moderate growth. At the European Union (EU) level, several measures have been implemented to alleviate the pandemic's impact: seasonal workers were recognized as critical workers, there were created "green lanes" to allow the flow of food, the administration was simplified, and there was provided significant financial aid. Being a cluster member certainly involve benefits - gathering knowledge and multi-level competencies. As the qualitative research revealed, the European Cluster members received support and had access to virtual events specially organized for the agricultural producers to overcome the pandemic effects. There is no evidence of such measures at the Romanian level.

Key words: Agriculture, COVID-19, Romania, Agro-based Clusters, Spatial Proximity
J.E.L. classification: Q13, Q17, Q19, C38

1. Introduction

In the year 2020, the COVID-19 pandemic has completely disrupted the world economy and people's lives. The interconnectedness of the global economy and the vital role of the global value chains have been intensively appreciated and discussed during the outbreak when the virus rapidly spread among countries, sectors, and economies.

Likewise, in the health sector, the agricultural industry had to mitigate several challenges during the pandemic. Food safety, food security, and food sustainability are acknowledged as severely affected food systems chains during COVID-19. (Galanakis Charis, 2020) The pandemic's immediate consequences for the agriculture sector were impressive delays in cross-border agricultural transportation, workforce deficit due to limited travel restrictions for seasonal workers, leading to a decrease in production, and a shrink in revenues due to restaurant and cafe's temporary closure.

In line with this, many experts expressed their concern about the food supply, which may run short, mostly when the supply chains are disrupted, while others fear the impact of restricting workers from harvesting and circulate across borders (The United Nations 2020, Glauber Joseph et al., 2020)

Although agriculture has reduced its contribution to the Gross Domestic Product (GDP) in Romania, it remains a significant activity for the rural communities. (Andrei and Popescu, 2014; Ciutacu et al., 2015; Barbu, 2017; Bularca and Toma, 2018; Andrei and Dragoi, 2019;) Also, policymakers perceive agriculture as an essential topic on their agenda, considering new reforms and measures to stimulate the industry to be competitive on the international trade map.

During the research conducted by Nowak and Kaminska (2016) aimed to analyze the agricultural competitiveness of the EU 27 during 2009-2011, the authors concluded an interdependence between the degrees of the competitiveness of the agriculture sector and the development level of the national economy.

The impact of the pandemic on the agricultural sector is still present and also acknowledged by Janusz Wojciechowski, European Commissioner for Agriculture, who stated, "The COVID-19 pandemic has unprecedented consequences for society and the economy. Farmers and every actor in the EU food supply chain work hard to provide us with food daily, despite their difficulties. The European Commission will continue to support farmers and food producers, work with the EU Member States, and take all necessary measures to ensure the health and well-being of European citizens." (European Commission, 2020)

This paper aims to assess Romanian exports' evolution in 2020 compared to 2019, focusing on the agriculture sector. Moreover, the research objective is to evaluate whether companies that are members of European or national clusters receive more incentives and support compares with the companies that are not part of any cluster.

2. Literature review

The first economist who described the cluster's concept in terms of "supply chains" is Alfred Marshall (1920). Marshall analyzed industrial agglomerations around London and concluded that the organizations and companies were interconnected mainly through three factors: labor force, specialized suppliers, and access to knowledge and information. The theory is also known as "The Marshall Triade" (Dan, 2011). Moreover, Marshall concluded that clusters of firms in a specific sector generate involuntary positive economic effects – the so-called externalities.

Since the 1950s, specialists actively debated the concept of a cluster and formed definitions revealing the factors that influence a cluster's efficiency and conducted pro and con discussions to examine the effects that a cluster generates inside a region.

Later on, Janes Jacobs (1961) discussed the role that agglomerations of parts that form up a city have in the economic development, stating that "Cities may fairly be called natural economic generators of diversity, and natural economic incubators of new enterprises."

In 1998, M. Porter defined a cluster as 'concentrations of interconnected companies and institutions in a particular field' (M. Porter, 1998, p.78)

Clusters involve a group of business and non-business enterprises for whom membership within the group is an essential element for each member's individual competitiveness. Clusters involve spatial proximity between their actors and actions, which enables in-person networking, common labor markets, and the transfer of knowledge.

The interest in cluster analysis mostly surged after the influential work of Michael Porter (1990). Most cluster studies performed worldwide use Porter's works as a critical factor for cluster assessment. (Bergman and Feser, 1999) In his work, "The Competitive Advantage of Nations," Michael Porter (Porter M., 1990) has demonstrated that it is not sufficient to interpret only the classical production factors to explain a region or a country's economic success. The economic success is influenced by a dynamic interaction of several factors – known as" Diamond of Porter": demand conditions; firm strategy, structure, and rivalry; factor conditions; related and supported industries. Michael Porter is considered nowadays the "Spiritus Rector" of economic policies based on cluster development. However, at present, Porter's model of national competitiveness is adopted by very few clusters. (Michael Enrights, 2000)

The membership of an organization to a cluster is supposed to receive the following benefits: (1) increased competitiveness and employment rate by connecting people, skills and knowledge; (2) enhanced efficiency due to a network of customers and suppliers; (3) stimulation of innovation; (3) increased power of bargain at national and international level due to large volume addressed; (4) arise opportunity of knowledge transfer.

Innovation is a sine qua non condition of economic success and maintains competitiveness companies globally. Innovation is not a linear process but a complex one based on a dynamic interaction between the principal actors involved in innovative systems. All these considerations lead to the "triple helix" model, which reunite under the umbrella of one cluster representatives from companies (economic part of a cluster), university and research institutes (suppliers of innovative solutions), and local/regional authorities. (Clubul Întreprinzătorului Român, n/a)

Cluster's main objectives can be classified under six main categories: research and networking, political action, commercial cooperation, education and training, innovation and technology, cluster expansion.

At the EU level, the importance of cluster is sustained by the establishment of the European Cluster Observatory, which recognized around 2000 clusters (defined as regional agglomerations) and involved 38% of the union's labor force.

Romania defines a cluster (HG 918:2006 – Impact Program) as a group of producers, users, and/or beneficiaries who gather with the scope of implementing best practices in the EU to stimulate the competitiveness among economic operators.

3. Research methodology

The conclusions of the present article are based on empirical research using both quantitative and qualitative methods.

There have been used the UN Comtrade data - TrendEconomy database, an open data portal based on Statistical Data and Metadata eXchange (SDMX) model and comprises up-to-date yearly and monthly international merchandise trade data. TrendEconomy contains 7241 datasets from 7 different sources: Eurostat, World Bank, International Association of motor vehicles manufactures, UN Comtrade, IMF, BP and OECD and it covers 468 thousand elements from 4061 dimensions.

The qualitative research is based on data review of available reports and studies. The approach was used mainly to compare the incentives obtained by local producers that operate under a cluster umbrella with those which are not part of any cooperative organization.

The following questions guided the research:

- Which was the overall evolution of Romanian exports during 2020, compared to 2019?
- Which were the most important Romanian exported sectors during 2019 and 2020?
- Which are the main Romanian exports by commodity for the agricultural sector in 2019 and 2020?
- Is there any evidence that Romanian agricultural clusters had more benefits than the other companies operating at the national level during the pandemic?
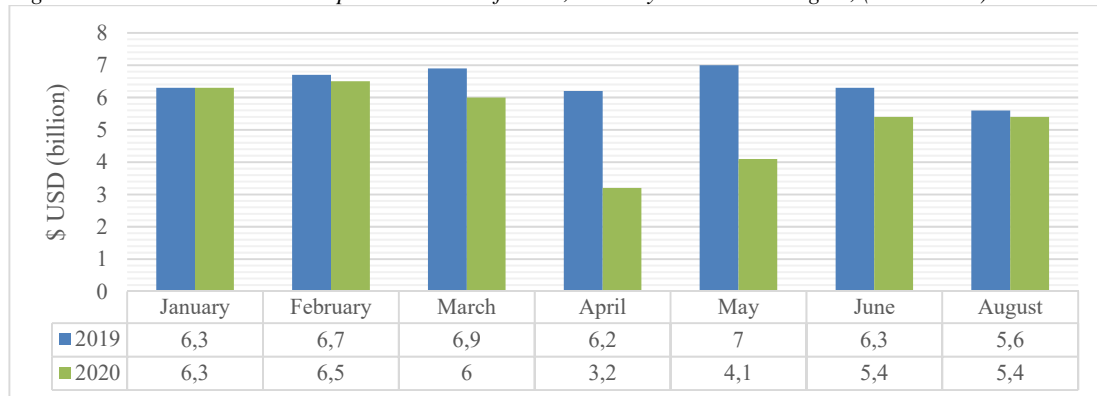
4. Findings

As the main findings indicate, the COVID-19 pandemic has directly influenced the balance of trade, affecting the agricultural sector's performance inclusively - the segment aimed to maintain life on the earth. As a response to the outbreak, several initiatives were implemented at the national and worldwide levels.

Inside the European Union, the authorities' focus was to ensure food availability for EU citizens, support the vital role of farmers and fishers using the resources of the Common Agricultural Policy and European Maritime Fisheries Fund and adopt a coordinated EU response. These objectives were to sustain unprecedented flexibility in the existing programs through direct financial support and an approach orientated towards building resilience. Moreover, to facilitate the food supply across Europe, seasonal workers were recognized as critical workers, and there were created "green lanes" to allow the flow of food, the administration was simplified, and there were fewer on-the-spot checks, temporary derogations from certain EU competition rules, flexibility in-market support programs for some products, reorientation of funding priorities under existing programs, aid for the private storage of dairy and meat products. In terms of financial support, the EU offered up to EUR 200.000 as loans and guarantees, EUR 800.000 for food processing and marketing campaigns, EUR 120.000 per farm, and funds of up to EUR 7000 per farmer and EUR 50.000 per small business. (The European Council, 2020)

As *Figure 1* indicates, although the beginning of 2020 compared to 2019 registered almost the same value of exports, the total value of trade decreased by 18%, from $USD 45 billion in 2019 to $USD 36.9 billion in 2020 for the January-June and August period. When Romania declared more than 1000 cases in March, the export value decreased from $USD 6 billion in March 2020 to $USD 3.2 billion in April 2020. However, in June, the value of exports registered a recovery which continued to August, reaching a value of $USD 5.4 billion. See *Annex-1* for a general perspective
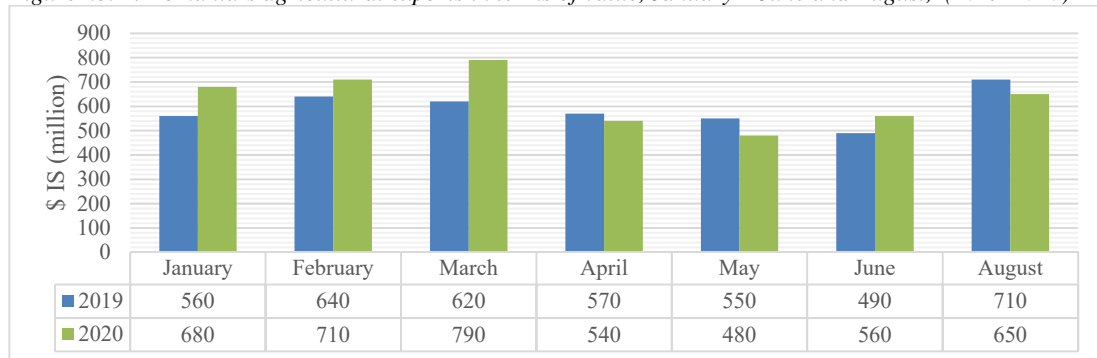
of European exports in 2020 compared to 2019.

Figure no. 1: Romania's total exports in terms of value, January – June and August, (2019-2020)

	January	February	March	April	May	June	August
2019	6,3	6,7	6,9	6,2	7	6,3	5,6
2020	6,3	6,5	6	3,2	4,1	5,4	5,4

Source: Author's own computation based on https://trendeconomy.com/trade (2020)

Despite the overall negative evolution of trade during the pandemic, the agricultural sector exports' value increased by 6.3%, from $USD 4.16 million in 2019 to $USD 4.41 million in 2020 for January-June and August periods. Analyzing the general evolution of agricultural exports during the pandemic, there can be noticed that the lowest value was registered in May - $USD 480 million, decreasing by -39% compared with the previous month. The exports started to bounce back in August, recording an overall value of agricultural exports of $USD 650 million.

Figure no. 2: Romania's agricultural exports in terms of value, January – June and August, (2019-2020)

	January	February	March	April	May	June	August
2019	560	640	620	570	550	490	710
2020	680	710	790	540	480	560	650

Source: Author's own computation based on https://trendeconomy.com/trade (2020)

As *Table 1* indicates, the three most vital Romanian export sectors maintained their position both in 2019 and 2020, as follows: Motor vehicles, parts and accessories; Motor cars and other motor vehicles; principally designed for the transport of persons and Insulated wire, cable, and other electric conductors, connector fitted or not; optical fiber cables. The agricultural commodities rank in the 8th and 9th position in the top ten classification: Maize (corn) and Wheat and meslin.

Table no. 1: Top most important commodity group values of Romanian exports in 2019 and 2020***

Rank	Commodity Group Value	Value (2019)* Billion $USD	% of total exports (2019)	Value (2020)** Billion $USD	% of total exports (2020)*
1	Motor vehicles; parts and accessories, of heading no. 8701 to 8705	6.9	8.96%	3.0	8.23%
2	Motor cars and other motor vehicles; principally designed for the transport of persons	5.5	7.08%	2.4	6.61%
3	Insulated wire, cable and other electric conductors, connector fitted or not; optical fibre cables of individually sheathed fibres, whether or not assembled with electric conductors or fitted with connectors	4.0	5.25%	1.8	4.98%

4	Petroleum oils, oils from bituminous minerals, not crude; preparations n.e.s. containing less than 70% petroleum oils, oils from bituminous minerals; these being the basic constituents of the preparations	2.5	3.20%	0,73	2.00%
5	Boards, panels, consoles, desks, cabinets, bases with apparatus of heading no. 8535, 8536 for electricity control and distribution, (other than switching apparatus of heading no. 8517)	2,5	3.17%	1,3	3.45%
6	Seats (not those of heading no. 9402), whether or not convertible into beds and parts thereof	1.9	2.40%	0,76	2.06%
7	New pneumatic tyres, of rubber	1.7	2.16%	0,78	2.12%
8	Maize (corn)	1.4	1.80%	0,74	2.03%
9	Wheat and meslin	1.3	1.65%	0,63	1.71%
10	Telephone sets, including telephones for cellular networks or for other wireless networks; other apparatus for the transmission or reception of voice, images or other data	1.2	1.57%	0,58	1.58%

*Values for the entire year, 12 months

**Excluding data for July, September, October, November and December 2020 – data is not available

Source: Author's own computation based on https://trendeconomy.com/trade (2020)

Table 2 suggests a homogenous character of agricultural commodities both for 2019 and 2020. The top 10 commodities registered 69% of the total agricultural exports in 2019, respectively 71% in 2020. Maize (corn), Wheat and meslin and Sunflower seeds, whether or not broken, were the top exported commodities in 2019 with shares of 17.26%, 15.79%, and 10.49% in 2019. During 2020, the third position was occupied by Cigars, cheroots, cigarillos, and cigarettes; tobacco or tobacco substitutes item, with a share of 11.20% in the total export.

Table no. 2: Romanian top agricultural exports by group of commodity, 2019*-2020*

Commodity	Value (2019)* Million $USD	% of total agricultural exports (2019)	Value (2020) ** Million $USD	% of total agricultural exports (2020)**
Maize (corn)	1390.7	17.26%	749.1	16.96%
Wheat and meslin	1272.2	15.79%	632.3	14.31%
Sunflower seeds; whether or not broken	845.1	10.49%	290.8	6.58%
Cigars, cheroots, cigarillos and cigarettes; of tobacco or of tobacco substitutes	742.8	9.22%	494.6	11.20%
Manufactured tobacco and manufactured tobacco substitutes; n.e.s., homogenised or reconstituted tobacco; tobacco extracts, essences	312.5	3.88%	418.3	9.47%
Sheep and goats; live	256.9	3.19%	139.1	3.15%
Barley	207.09	2.57%	128.8	2.92%
Rape or colza seeds; whether or not broken	206.2	2.56%	105,1	2.38%
Sun-flower seed, safflower or cotton-seed oil and their fractions; whether or not refined, but not chemically modified	196.5	2.44%	82,1	1.86%
Bread, pastry, cakes, biscuits, other bakers' wares, whether or not containing cocoa; communion wafers, empty cachets suitable for pharmaceutical use, sealing wafers, rice paper and similar products	191.9	2.38%	109,6	2.48%

*Values for the entire year, 12 months

**Excluding data for July, September, October, November and December 2020 – data is not available

Source: Author's own computation based on https://trendeconomy.com/trade (2020)

Analyzing the support received by agricultural producers as a European Agricultural Cluster member, there is evidence of special aid and stimulus received. There were several initiatives organized specially dedicated to agricultural producers during the pandemic period as follows:

(1) SmartAgriHubs positively addressed labor shortages for farms by employing robotics, precision farming, and online matchmaking services throughout the Covid-19 pandemic, securing citizens access to fresh food despite the difficult circumstances. A review of the measures implemented by SmartAgriHubs in France and the United Kingdom can be analyzed at SmartAgriHubs (2020). (The European Commission, 2020)

(2) The European Cluster Collaboration Platform (ECCP) organized special webinars discussing subjects such as Cluster responses to the COVID-19 crisis and digitalization.

(3) The European Cluster Alliance Against Coronavirus – organized over 70 videoconferences connecting over 500 experts, discussing a wide range of COVID-19 related topics such as public procurement, economic and social impacts, ICT solutions, prototyping of respirators and 3D printing, and others.

(4) Webinar on the Agri-food ecosystem – organized under the European Alliance Against Coronavirus umbrella.

(5) An event organized in September 2020 by the European Cluster Alliance (ECA), Eurada, and the European Commission - the "S3: Smart Specialisation Strategies Week" to support clusters and SMEs to make use of the EU Structural Funds for recovery.

At the Romanian level, the first agricultural cluster was set up in Cluj-Napoca – the AgroTransilvania Cluster. Currently, there is a total number of four agri-clusters at the national level.

According to the conducted qualitative research, there were not identified any specific evidence of measures or events organized by the agri-food clusters dedicated to the pandemic, other than saluting and promoting the special events organized at the European level. The activity of the following clusters was analyzed ADR SV Oltenia, Agro Transilvania, IND-AGRO-POL, BIODANUBIUS.

5. Conclusions

The COVID-19 outbreak highlights the fact that in a global community, everything and everyone is interconnected. Very active, from a single city, the virus spread to 188 countries around the world, transforming people's lives and the economic layers with no exception. Despite the decades of modeling pandemics to predict potential consequences, the COVID-19's impact on the food supply chain and particularly on livestock production was still unforeseen.

In light of recent challenges in the food supply chain, the pandemic caused significant concern in food production, processing, distribution, and demand. More specifically, COVID-19 caused financial pressures in the food supply chain, restrictions in workers' movement and trade policies, changes in demands, and food production facilities' closures.

To alleviate the pandemic's consequences on the food sector, the EU took immediate actions and facilitated the movement of workers and agri-food products and offered financial support for small farmers and SME businesses in the agri-food sector.

At the Romanian level, the total value of trade decreased by 18%, from 45 $USD billion in 2019 to $USD 36.9 billion in 2020 for January-June and August periods. The top three sectors that mostly contributed to Romanian exports in 2019 and 2020 were as follows: Motor vehicles, parts, and accessories, Motor cars and other motor vehicles; principally designed for the transport of persons and Insulated wire, cable and other electric conductors, connector fitted or not; optical fibre cables. The agricultural exports composition is homogenous, mainly conducted by three sectors, which have a total share of approximately 70% in agricultural exports in 2019 and 2020. Maize (corn), Wheat and meslin and Sunflower seeds; whether or not broken were the top exported commodities in 2019, adding in 2020 the Cigars, cheroots, cigarillos and cigarettes; of tobacco or of tobacco substitutes item.

Being a member of a global cluster definitely brings its rewards. As the research conclusions indicate, the European clusters organized several webinars and virtual meetings for the agricultural procedures, reuniting cross-border experts during the pandemic. The strength of the cluster is gathering knowledge and multi-level competencies - as its members offer their cross-sectoral contributions from all over Europe. There was no clear evidence concerning national clusters that members of clusters benefited more than the independent producers in Romania.
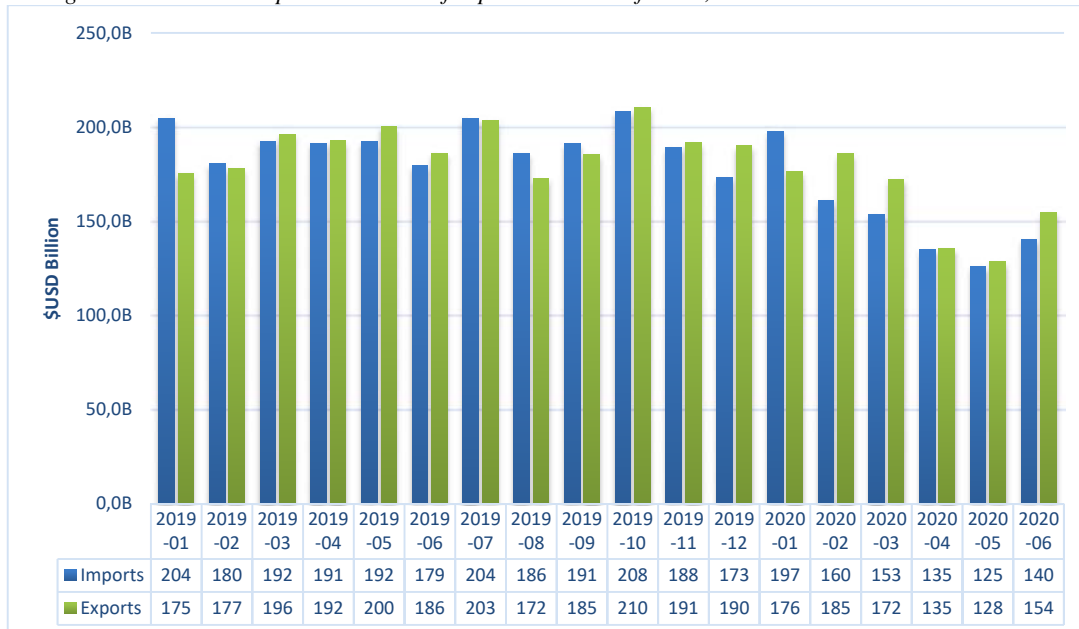
6. Acknowledgment

The present study is part of the post-doctoral project "Analysis of the competitive sectorial position in the global business network. Romania and the agricultural sector" coordinated by the post-doctoral School of Economics and International Affairs.

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Appendix

Figure no. 1: The European evolution of exports in terms of value, 2019-2020*

	2019 -01	2019 -02	2019 -03	2019 -04	2019 -05	2019 -06	2019 -07	2019 -08	2019 -09	2019 -10	2019 -11	2019 -12	2020 -01	2020 -02	2020 -03	2020 -04	2020 -05	2020 -06
Imports	204	180	192	191	192	179	204	186	191	208	188	173	197	160	153	135	125	140
Exports	175	177	196	192	200	186	203	172	185	210	191	190	176	185	172	135	128	154

**Excluding data for July, September, October, November and December 2020 – data is not available for 2020

Source: Author's own computation based on https://trendeconomy.com/trade (2020)