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FOOD INSECURITY AND PANDEMICS: ADDRESSING THE FOOD SHOCK OF COVID-19 IN ROMANIA

ABSTRACT

Although the impact of the Covid-19 pandemic on food security is difficult to predict on the medium and long term, governments need to address the short-term food shock. The current Covid-19 pandemic is already directly affecting food systems and states must take immediate actions to mitigate food insecurity. Policy makers' decisions must take into account the current epidemiological situation alongside the magnitude of the food shock and food-chain disruptions generated by Covid-19.

The purpose of this paper is to determine Romania's self-sufficiency in the main groups of agri-food products by analyzing the 2019 food balance data. The main objective of ascertaining a food balance is to obtain an overview of the availability of agri-food products associated with the consumption of the population in a period of one year. We argue that the current pandemic acts as a large-scale unforeseeable shock that must be treated as an inflection point in terms of policy response. Based on this approach, we propose possible measures, solutions and strategic alternatives for Romania.

Key words: food security; food shock; Covid-19; agri-food products; self-sufficiency.

JEL Classification: Q11, Q18.

1. INTRODUCTION

Pandemics are large scale events with a high degree of complexity that act as black swans on an economic level (Valeras, 2020). They are impossible to predict and their overcoming needs a cohesive and exhaustive political and economic approach (Cavanagh *et al.* 2020). The alarmingly high spread rate for the SARS-CoV2 virus (Covid-19) is caused by the high level of infectivity, the long incubation period, and by the significant number of asymptomatic or mildly infected patients. The magnitude of the problem has been further amplified by governments' low degree of anticipation and readiness in the face of such a large epidemiological event, as well as by the delayed response of many state actors (Cavanagh *et al.* 2020). As a consequence, WHO declared a Covid-19 pandemic on March 11, 2020.

The pandemic endangers both people's lives and their lifestyles, affecting both the behavioral patterns of the population and their consumption habits. While consumer sentiment varies greatly across countries impacted by Covid-19 (Baker *et al.* 2020), consumers intend to continue shifting their spending patterns to essential products and services (Hall *et al.* 2020). Therefore, Covid-19 has an impact on the demand for agri-food products, by reshaping consumer behavior patterns. Covid-19 also affects the supply of agri-food products, particularly through the social distancing measures needed to be adopted.

Border closure, quarantine and social distancing measures create a large-scale disruption of supply and delivery chains (Govindan *et al.* 2020). In the event of a state or regional lockdown, even a 14-day cessation of certain commercial activities can restrict people's access to sufficient, diverse and nutritious food sources (Ivanov, 2020). This scenario is especially more likely to occur in countries severely affected by the virus or in countries that are already affected by high levels of food insecurity (Ivanov, 2020). Until the fall of 2020, the disruptions caused by Covid-19 have been minimal, the markets being generally stable and the supply-delivery chains not being severely affected regardless of industry or economic sector (Guan *et al.* 2020).

For agri-food products, the disruptions have also been minimal on a global level throughout the course of 2020 (Espitia *et al.* 2020). For example, international commodity prices - such as palm oil or corn oil - have fallen, while rice prices have raised due to Thailand's export restrictions. At the international level, however, the prices of agri-food products have generally not changed significantly. However, the current situation may deteriorate rapidly in the likely scenario of new epidemic waves. Therefore, it becomes necessary to analyze the degree of self-sufficiency in the main groups of agri-food products, both at the state level and at higher levels of state integration such as the European Union. The purpose of this paper is to determine Romania’s self-sufficiency in the main groups of agri-food products, while proposing possible measures, solutions and strategic alternatives for Romania.

2. STATE OF KNOWLEDGE

At the economic level, a pandemic acts like a large unforeseeable shock (Albu *et al.* 2020). It is of primary importance to first understand the nature of the shock that has occurred. In comparison to other economic recessions, a pandemic economic shock is characterized by a large-scale economic turmoil, followed by a vast period when nothing happens and the world stands still in economic terms (Pennington, 2020). In a typical economic crisis, the nature of the economic shock is most commonly associated with some type of “demand deficiency” triggered by fears of a less bright future (Castells *et al.* 2012). This kind of generalized fear

expands to consumers and evolves in a fear spiral that to some extent becomes a self-fulfilling phenomenon.

The standard approach to dealing with the typical economic shock is a Keynesian-demand approach based on the Chicago school of economic thought and involves monetary and fiscal interventions to bring demand back up and to avoid entering the fear spiral (Castells *et al.* 2012). However, it must be noted that a pandemic is not a self-fulfilling phenomenon. Even in a pandemic, people still need to eat and fulfill their basic necessities. Therefore, the economic policy should focus on bridging the beginning and foreseeable end of the pandemic. In this regard, food resources availability and accessibility become essential.

Secondary, the food crisis is worsening around the world. In these circumstances, stabilizing citizens' income and access to food is critical in order to preserve ongoing livelihood. Because the current Covid-19 pandemic is already directly affecting food systems, countries adopt strategies to ensure continuity of critical food supply chains. However, the current situation shows that the most vulnerable population was the most affected by lockdown measures (Toffolutti *et al.* 2020). The poor and the elderly have limited to no access to modern food supply chains, therefore they are forced to face a food security risk alongside an epidemiological risk (Bublitz *et al.* 2020).

In these complex circumstances, many countries and international organizations are implementing special policies and action plans to keep agriculture and food supply chains up and running as an essential business. Although food trade has proven to be more resilient than overall trade during the current Covid-19 pandemic, there is a primary risk of food security at the country level (Toffolutti *et al.* 2020). For European developing countries, the main sources of food insecurity risk are represented by disruptions in the food supply chain, higher retail prices and consumers' diminishing or even lack of income (Erokhin & Gao, 2020). Therefore, each state must make a comprehensive analysis about shocks that are affecting food production in the context of the Covid-19 pandemic.

3. MATERIAL AND METHOD

At the state level, the current analysis for our study is based on food balances. The main objective of ascertaining and examining a food balance is to obtain an overview of the availability of agri-food products in association with population's consumption levels in a one-year period. In the case of Romania, the National Institute of Statistics publishes the food balances for 13 groups of agri-food products of plant and animal origin. These food balances include both the primary and the processed products. At a functional level, the food balance represents a synthesis of quantitative information that highlights the dynamic balance between the raw materials for agri-food products and the way they are used (Wuehler *et al.* 2005).

At an operational level, in order to determine the degree of self-sufficiency we have taken from the food balance the following indicators: usable production, the balance between imports and exports, but also intermediate consumption, respectively losses. We followed Cialfa's *et al.* (1991) recommendations to include in our analysis of usable production both self-consumption and the quantities of primary or processed products obtained by producers during the reference period. We have proceeded in this manner because in the case of processed products, any losses suffered during the production process must be highlighted in the total losses section (Biro *et al.* 2002). Where appropriate, intermediate consumption includes both the consumption of seed and fodder, as well as the industrial processing. We have determined the average annual consumption in line with Biro's *et al.* (2002) recommendations by assessing the total quantity of products that can be used as food relative to the resident population of Romania.

The available data allows an analysis of the situation for the reference point of 2018. The resident population of Romania used as a calculation basis for determining the average annual consumption was 19405 thousand people, according to the INS population estimate of January 1, 2019. It should be noted that a self-sufficiency analysis for agri-food products based on food balances has two major disadvantages (Biro *et al.* 2002):

1. Although the demand for agri-food products is generally inelastic in relation to consumer incomes, food balances provide only a retrospective perspective of the consumption situation at any given time;

2. Food balances do not include and cannot anticipate the change of consumption patterns of the population in relation to extrinsic factors (e.g.: society's attitude towards certain products or product categories, price evolution, the evolution of the economy as a whole, etc.) or intrinsic factors (e.g. state of health, individual motivations or attitudes, etc).

4. RESULTS AND DISCUSSIONS

At the base of the food pyramid are fruits, vegetables and other products of plant origin. The situation in Romania for these product categories is presented in Table 1.

Table 1

Fruits, vegetables and other products of plant origin

	Production thous. t	IC thous. t	Loses thous. t	Imports thous. t	Exports thous. t	Annual Mean Consumption kg/pc	Self-sufficiency % based of total
cereals	31112,3	8975,2	82,5	2063,3	12065,7	155,2	168,9
wheat / rye	10172,3	1208,5	15	1038	5968,8	121,4	179,8

corn	18663,9	6683,1	59,5	518,7	4726,7	29,3	209,6
rice	21,6	1,2	2,2	93,7	24,6	4,1	22,9
other cereals	2254,4	1082,2	5,8	412,6	1345,5	0,4	150,2
Vegetables							
potatoes	3022,7	935	258,6	405,2	434,6	95,5	98,7
tomatoes	742,8	-	189	269,3	4,6	41,4	68,9
dry onion	350,1	0,4	14,1	110,4	1,5	22,7	76,1
cabbage	1065,5	106,5	35	31,6	2	44,5	107
root vegetables	232,8	20,9	6,7	97,6	1	15,5	68,2
grains	191,4	81,3	0,4	41,3	69	4,1	141,3
other vegetables	822,1	10,2	64,7	262,8	52,5	49,4	78
Fruits							
apples	643,8	32,1	45,8	167,8	37,9	31,7	92
plums	842,1	673,7	25,8	20,2	0,4	7,1	103,5
cherry (all types)	90,8	0,9	1	9,3	4,4	4,8	95,6
peaches	22,6	-	-	82,2	0,3	5,4	21,6
grapes	1144,3	1040	1,1	72,7	9,1	8,5	62,6
other local fruits	214	-	8,4	108,2	29,6	14,7	72,1

*) IC - intermediate consumption.

Source: Authors calculations and data from INS (2019).

In the case of cereals, Romania has an adequate degree of self-sufficiency. With the exception of rice, Romania can ensure its domestic consumption needs without resorting to imports. Rice is a special case because the pedoclimatic conditions only allow the cultivation of certain species of rice. These varieties of rice are not necessarily in the top of Romanian consumers' preferences. As a result, a large part of the domestic rice production is being exported. Basically, the local rice market is strongly influenced by the Romanian culinary traditions regarding rice consumption and on the negative associations Romanians make about rice.

In the case of vegetables, Romania has a good degree of self-sufficiency for potatoes, cabbage and grains, being able to fully satisfy the demand for such products without resorting to imports. In order to satisfy the domestic consumption needs for dried onions, root vegetables and other type of vegetables, Romania must resort to imports, because the domestic production manages to saturate only between 68.2% (for root vegetables) and 78% (other types of vegetables) of the domestic demand. A special situation is registered in the case of tomatoes, where Romania can fully cover domestic consumption needs in full season from its domestic production based on local varieties of tomatoes. Off season, Romania must resort to imports to fulfill domestic consumption needs.

In the case of fruits, Romania covers its consumption needs only for plums, sweet cherries and sour cherries. In the case of sweet cherries and sour cherries, the difference between imports and exports is given by a large seasonal gap: through

imports, the consumption season for these two easily perishable fruits is extended by six to ten weeks. Even if in 2018 Romania covered only 92% of its apple consumption from its own production, the degree of self-sufficiency is satisfactory in the context of sacrificing the assorted diversity of apples conferred by imports. In the case of grapes and other indigenous fruits, the degree of self-sufficiency is unsatisfactory (62.6% for grapes, respectively 72.1% for other indigenous fruits). In case of major disruptions in the supply-supply chains, the consumption of peaches and nectarines is severely endangered, as domestic production covers only 21.6% of local consumption needs. Although it represents an important share of the local fruit consumption (14.9%), southern and exotic fruits come entirely from imports, in most cases there is no possibility to produce these fruits in Romania.

A proper and balanced diet requires a significant protein intake daily. One of the most frequently used sources of protein in Romanian gastronomy is meat and meat products. The situation of these product categories is presented in Table 2. For poultry, cattle, sheep and goats, the degree of self-sufficiency is satisfactory. For poultry, cattle and organs, Romania's own production can cover a large proportion (between 87.7% for organs and 92.1% for cattle) the need for domestic consumption. The situation is even better in the case of sheep and goats, where the degree of self-sufficiency reaches a value of 119.7%. However, swine fever significantly affects domestic pork production, in this case the degree of self-sufficiency being unsatisfactory: in the absence of imports, domestic production can meet domestic demand only in proportion of 57.3%. The situation is even worse because pork has the largest share (45.9%) in local consumption of meat and meat products. An extremely unpleasant situation is registered in the case of fish and seafood products where the domestic production covers only 18% of the consumption needs.

Table 2

Meat and meat products

	Production thous. t	IC thous. t	Loses thous. t	Imports thous. t	Exports thous. t	Annual Mean Consumption kg/pc	Self-sufficiency % based of total
cattle	92,8	-	-	20,9	12,9	5,2	92,1
swine	426,1	-	-	361,1	34,1	38,3	57,3
sheep/goats	51,1	-	-	1	10	2,2	119,7
poultry meat	463,9	-	-	160,5	92,2	26,9	88,8
organs(all)	49,3	-		20	9,3	2,9	87,7
fish	23,5	-	-	111,7	6,2	6,7	18
other meats	1,3	-	-	30	8,5	1,2	5,6

*) IC - intermediate consumption.

Source: Authors calculations and data from INS (2019)

Numerous basic necessities are usually included in the extended diet in the form of additional secondary food products alongside primary products such as fruits, vegetables and meat. The situation in Romania for these product categories is presented in Table 3.

Table 3

Derivative products

	Production thous. t	IC thous. t	Loses thous. t	Imports thous. t	Exports thous. t	Annual Mean Consumption kg/pc	Self-sufficiency % based of total
eggs (no.)	5713000	216000	821000	348000	428000	235 no./pc	102,5
milk (hl)	52835	6288	5095	10428	2791	250,8 l/pc	68,8
oils	310,8	56	1,3	96,1	58,7	14 kg/pc	93,3
margarine	56,4	-	-	29,9	17,6	2,9 kg/pc	101
butter	11,1	0,5	-	12,1	0,5	0,8 kg/pc	68,8
sugar	137,3	18,1	12,1	494	111,3	25,4 kg/pc	21,7

*) IC - intermediate consumption.

Source: Authors calculations and data from INS (2019)

Romania can fully cover its domestic consumption needs for margarine and poultry eggs. A paradoxical situation is registered in the case of vegetable oils, where the processors' non-existence or inefficiency does not allow an optimal capitalization of sunflower and rapeseed crops, respectively. Therefore, despite a significant production of rapeseed and sunflower, the degree of self-sufficiency in the case of vegetable oil is only 93.3%. An equally paradoxical situation is registered in the case of milk and butter, where the degree of self-sufficiency is 68.8%, although farmers complain that they have no one to sell their own milk production (Popescu, 2017). The domestic production of sugar and sugar products cannot keep up with the Romanian appetite for sweets, covering only 21.7% of domestic consumption. However, this situation is also due to the fact that the sweets preferred by Romanians (especially chocolate) generally come from imports.

5. CONCLUSIONS

Although Romania does not realize its full potential in terms of self-sufficiency, in general there is a satisfactory level of self-sufficiency in the main groups of agri-food products. Through domestic production and carefully planned production restructuring or by refocusing main agri-food supply-chains, Romania

can keep at minimum the risk of facing a food shortage caused by the health crisis. However, there are some notable exceptions, especially in the case of sweets, pork, fish products, milk and butter.

The cereals market should be a particular priority in the context of the pandemic, especially in the event of a high probability of an extended epidemic wave. According to Stratfor, cereals and their price - especially wheat - are a "stick" of geostrategic importance in international relations. Therefore, it is particularly important for Romania to adopt measures to prevent or stop the "decimation and scalping" on the cereals market in the current epidemic context. These measures are even more necessary in the context of the prolonged drought at the end of 2019 and beginning of 2020, alongside the shortage of water in soil caused by the absence of precipitations and by the low efficiency of irrigation systems.

Significant attention must also be paid to efforts to control swine fever and to increase fishing and aquaculture performance.

In regard to ensuring the availability of agri-food products for consumption, the main recommendations for this uncertainty period – up to the widespread availability of a vaccine against SARS-CoV2 – should be in line with the following guidelines:

1. States should first and foremost ensure that the immediate food needs of their populations are met, especially for disadvantaged segments of the population.

2. The state should increase the efficiency of production processes and contribute to reducing the costs of distributing agri-food products to final consumers, inclusively through digitization.

3. The state should carry out balanced social programs, with the role of supporting both supply and demand.

4. End consumers and businesses should reduce or eliminate food waste.

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