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COVID-19 VS. RISK MANAGEMENT SYSTEMS IN THE US AND CANADIAN AGRICULTURE

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Abstract:
COVID-19 pandemic disturbed the normal functioning of the global and national economies. Numerous sectors experienced serious fall in their economic activity due to lockdowns. Agriculture has not been the biggest victim of the sudden storm in the socio-economic life, but some parts of the sector suffered visible disturbance to their normal activities and resulted in revision of policies aiming at food supply stabilization.
The importance of the risk management systems in agriculture has been growing as the global interconnectedness and climate changes result in increasing riskiness of agricultural activity.
The aim of the paper is to show one of the most advanced agriculture risk management systems, that is the US and Canadian ones and to assess how well fitted they are to support farming in times of abrupt turbulences. The study is based on literature review. The study shows that both US and Canadian agriculture risk management systems offer a wide range of support tools and can be swiftly modified to strengthen their effectiveness when needed.

Keywords: agriculture, risk management, USA, Canada, COVID-19, resilience.

JEL Codes: Q18, Q14.

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1. Introduction

COVID-19 pandemic disturbed the normal functioning of the global and national economies. Numerous sectors experienced serious fall in their economic activity due to lockdowns. Agriculture has not been the biggest victim of the sudden storm in the socio-economic life, but some parts of the sector suffered visible disturbance to their normal activities and resulted in revision of policies aiming at food supply stabilization.

The volatility of food production and food prices leading to higher income risk in agriculture has been growing in recent years due to numerous factors. In case of production risk climate changes seems to be the key cause. Rising volatility of prices on agricultural markets were caused by supply shocks, sudden changes in trade policies and growing impact of speculation on future markets. All these factors showed a need for strengthening the resilience of agriculture and creating agile food systems.

Resilience of farms is a multifaceted concept. It stems from other fields of science, especially from material sciences and psychology. It relates to the capacity of a given entity or a whole system to rebound to their development path when faced with a stress factor disturbing the status quo. Urruty et al.

(2016) revied literature on resilience and stated that it is not a unified concept but two different approaches. First of them is related to the concept of vulnerability and robustness and focuses on the capacity to recover from perturbations. Second approach concentrates on the capacity of socio-ecological systems to transform themselves. Moreover, resilience "is a complex issue and in the context of agriculture it is analyzed at different levels. It can be studied at a level of a single farm or a whole region/country or in the context of the whole food system" (Wieliczko, 2019, p. 447).

It must also be underlined that there "does not yet exist a definitive set of resilience enhancing principles or a synthetic understanding of where and when they apply" (Biggs et al., 2012, p. 424). Yet, some researchers offer a set of measurement approaches that can make the concept clearer to apprehend in practice. Wiréhn et al. (2015) emphasized the fact that the actually resilience is a function of exposure to perturbations, sensitivity of the system affected and its capacity for adaptation, while as stated by Cabell and Oelofse (2012) resilience of socio-ecological systems can be measured as:

(1) "the amount of change the system can undergo and still retain the same controls on function and structure;

(2) the degree to which the system is capable of selforganization; and

(3) the ability to build and increase the capacity for learning and adaptation".

The pandemic of COVID-19 has a significant impact on global food systems. As stated by Nielson (2020), they face a triple challenge:

- providing food security and nutrition to a growing global population;
- contributing to the livelihoods of people around the world working along the food supply chain; and
- ensuring the environmental sustainability of the sector, while adapting to, and helping to mitigate climate changes.

The impact of COVID-19 has been different, depending the scale of stake-holder and their place in the food chain. We can distinguish between short term and long term impacts on the activity and well-being of these entities (tab. 1).

The resilience of agriculture and of the whole food system depends on their risk management systems. These need to be called for in times of a serious disturbance such as a pandemic to support continuation of their operations. The risk management systems in agriculture are generally composed several different tools and measures. They include farmer's own risk management activities, market transfer of risk and the instruments of agricultural policy.

Table 1. Adverse impacts of the COVID on producers and processors of agricultural products and expected direct effects on their food security

Actors	Types of adverse impacts reported	Expected direct effect on actors' food security	Subsequent indirect effect on other actors' food security
Producers	▪ Disruption in input supply chain (e.g. fertilizer) and/or subsequent increase in input prices	▪ Drop in profitability affecting producers' income, purchasing power and access to traded food	▪ Reduced food availability for retailers, vendors and eventually consumers; disruption or reduced stability of food availability
	▪ Reduction in demand of certain products (excess supply) leading to drop in farm-gate product prices		
	▪ Reduction in labor/workers availability		
Processors	▪ Reduction in demand of certain items (excess supply) leading to decline in business profitability	▪ Drop in profitability affecting processors' income, purchasing power and access to traded food	▪ Increase in risk of food safety issues for consumers
	▪ Shift in food suppliers (with potential drop in quality / stability of food traded)		

Source: Béné (2020), tab. 1.

2. Canada – agriculture and risk management system

The agricultural sector is a minor part of the Canadian economy. The share of agriculture, including forestry and hunting, in the value of the gross domestic product of the Canadian economy in recent years has not exceeded 2%, while the share of the whole food sector amounted to about 7% (Statistics Canada, T. 36-10-0401-01). There is a significant regional diversity in the role played by agriculture. In the Yukon region the share of agriculture in the creation of GDP is about 0.2%, while in the Prince Edwards region 7% (Biggs, 2019). It is estimated that about half of Canada's agricultural production is exported (Arora, 2017, p. 4).

The agricultural production is almost equally divided between animal and plant production. In 2018 rapeseed amounted to 26.6% of plant production. Other important crops were wheat 16.2%, vegetables 9.4% and soya 8.7%. In the case of animal production slaughter cattle dominated. Together with milk, it accounted for over 61.7% of the value of animal production. Poultry and eggs, accounted to 18.3% and pigs 16.1% of animal production.

In 2016, the number of farms operating in Canadian agriculture did not exceed 193,500, a decrease of 30% compared to 1996 (Statistics Canada, 2020, table 32-10-0156-01). During this period the number of the largest farms, i.e. from 1165 to 1424 ha increased by nearly 20% and with UAA over 1424 ha by

nearly 89%. Despite such a dynamic growth, in total, these farms in the structure of all farms increased their share from less than 2.8 p.p. to about 6.4%. The most numerous group in the whole period covered by the analysis were, farms with an area of farmland ranging from 97 to 226 ha. Although their number decreased from nearly 60,000 to less than 37,000 (a decrease of more than 37%), they accounted for nearly 19% of all farms in Canada in 2016. The income structure corresponds with land structure with app. 1.5% of farms with an annual income of more than CAD 250,000 (fig. 1).

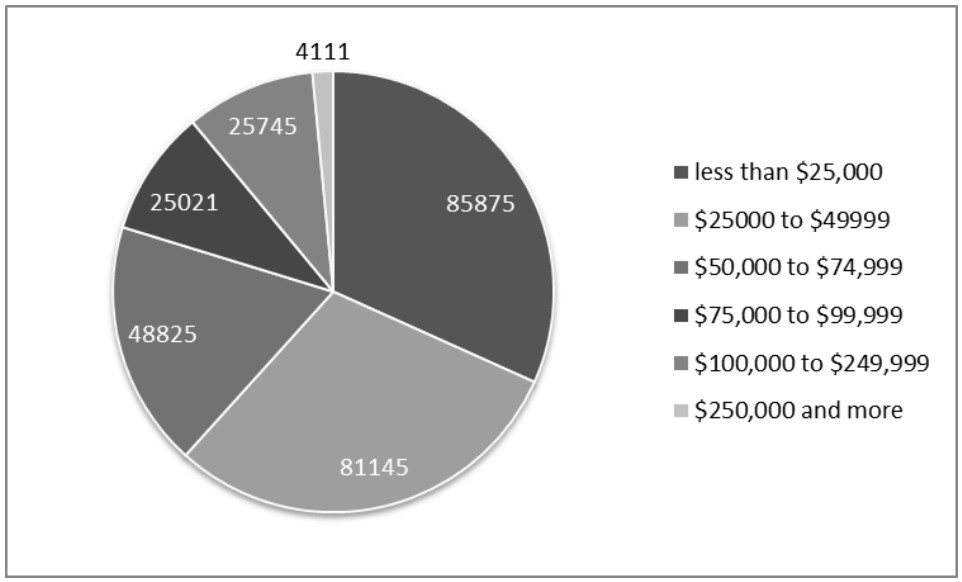

Figure 1. Income structure of Canadian farms
Source: Statistics Canada. Table 32-10-0027-01

The public part of the risk management system in the Canadian agriculture is called Business Risk Management Programs. It amounts to a vast part of the public support for Canadian agriculture (Ker et al., 2017, p. 591). These programs include following elements:

- AgriStability,
- AgriInvest,
- AgriInsurance,
- AgriRecovery,
- Advance Payments.

AgriStability is dedicated to producers who have experienced a significant reduction in income. A surplus (margin) is used to determine farm income. It is equal to the difference between eligible income and eligible expenses for the year, adjusted by changes in receivables, liabilities and stocks. Eligible expenses include purchases of goods and costs directly related to agricultural activities. A reduction in income to less than 70% of the reference average calculated as the Olympic average over the last five years gives entitlement to claim payments. However, where the average of the eligible expenses of the years taken into

account for calculating the reference surplus is less than the calculated surplus, the reference surplus used shall be limited to the average of the eligible expenditure.

AgriInvest supports the creation of a fund by a farmer to cover relatively small, extraordinary expenses. The fund takes a form of a savings and settlement account and serves to manage small drops in income, i.e. not eligible for the AgriStability program. For this purpose, agricultural producers may each year deposit in an individual account amounts corresponding to up to 100% of their net eligible sales revenues (the difference between net sales revenues and payments from eligible programs) and the purchase costs of eligible production inputs) and receive support in the form of a government grant of 1% of its net eligible sales. However, maximum sum a farmer can deposit is an equivalent of CAD 1,000,000 and receive CAD a government subsidy of CAD 10,000.

AgriInsurance is a program to support financially and organizationally agricultural producers in minimizing the economic impact of production losses resulting from uncontrolled phenomena in the farm's production surrounding. The functioning of the program is based on a cooperation and co-financing by the Canadian government and regional administration of agricultural insurance and reinsurance (deficit financing). Action plans and their budgeting under AgriInsurance are created at the level of regional authorities as part of the Canadian Agricultural Partnership. The production insurance support scheme covers both quantitative production losses (including reduced yields) and product quality losses.

AgriRecovery is applicable in the event of natural disasters. It is not only a support program. It defines the operating framework of the central and regional administration to assess the effects and needed actions to be undertaken in the event of natural disasters to mitigate the effects of the incident and resume production, assess whether producers are able to take the measures necessary to obtain the necessary aid under the basic risk management programs (i.e. AgriInsurance, AgriStability or AgriInvest) and determine if additional aid is needed for producers. Additional assistance is financed under the AgriRecovery initiative by the national and regional administration in the proportion 60:40. These activities are intended to be complementary to basic risk management programs and cannot be treated as substitutes. In addition, agricultural producers, in the event of natural disaster events, may be covered by non-agricultural support programs, such as activities financed by the Canadian Food Control Agency or cross-industry disaster relief programs.

Another risk management support instrument is the Advance Payments Program, which offers agricultural producers help in meeting their financial obligations by improving cash flow and supporting the marketization of agricultural products. This program is based on loans to agricultural producers amounting up to CAD 400,000 with central government financing of interest on the first CAD 100,000.

The Canadian system of risk management in agriculture seems to be functioning well and fulfilling its role, as evidenced also by the results of surveys conducted among farmers (Agriculture and Agri-Food Canada, 2018, p. 17). It is worth emphasizing that this system is based on the active approach of

farmers and rewards their involvement in programs supporting risk management.

The COVID-19 pandemic directly and indirectly affected the Canadian agriculture. This disturbance has had a different scale of impact on the specific part of the sector. When it comes to foreign trade it is likely that livestock, pulses and horticulture will experience the largest fall in demand (Barichello, 2020, p. 223).

In connection with the COVID-19 pandemic, the Canadian Ministry of Agriculture has taken additional measures aimed at agricultural producers. As part of the AgriRecovery program, funding has been increased to help compensate producers' additional costs resulting from supply chain disruptions. This measure is intended to cover the additional costs of prolonged keeping cattle and pigs on farms due to the loss of possibility of selling the animals caused by a temporary closure of food processing plants.

An increase in the credit limit for the Canadian Dairy Commission serves the same purpose and is intended to compensate for the costs of temporarily storing surpluses of cheese and butter in the face of reduced demand. At the same time, a program of buying surplus food (unsold stocks, especially potatoes and poultry) was launched in order to redistribute it to local consumer organizations and people at risk of malnutrition.

Moreover, agricultural producers and processors can take advantage of measures for all entrepreneurs, such as wage subsidies to enable workers to be rehired or to prevent layoffs.

In addition, the first installment of the AgriStability payment was increased from 50% to 75% in order to speed up the transfer of support to producers experiencing a significant fall in income.

The Emergency Processing Fund (EPF) allocated 77.5 million CAP for investments allowing for changes in the organization of work to ensure health. and employee safety and ensuring the functioning of the food system. To cover additional costs related to employing foreign workers on farms resulting from the necessity to undergo quarantine CAD 50 million of public funds were allocated.

3. General characteristic of agriculture and chosen risk management instruments in the USA

Agriculture in the United States of America is the third largest agricultural sector in the world, after China and India. In 2017, the value of production of the US agricultural sector reached USD 178 billion (in 2010 constant prices). At the same time, US agriculture belongs to the ten agricultural sectors with the highest level of added value per employee in the world (nearly 80,000 USD). (Worldbank; 2020). Total agricultural area in the USA exceeds 405 million ha.

According to the 2017 agricultural census, the number of farms in the USA is estimated at around 2 million (USDA, NASS; 2019) with the average farm area of app. 180 ha. A systematic decline in the number of farms is accompanied with high market value of the farm machines and equipment. In 2017, it amounted to an average of over USD 133,000 with the highest average

for North Dakota at USD 376,000, and the lowest for West Virginia at USD 56,000. The high value of on farm equipment is one of the most important reasons for the high level of work efficiency in US agriculture.

Due to the large diversity of natural conditions, significant differences in both the main directions of production and farm size are observed. The average area of a farm located in Massachusetts, Connecticut or Rhode Island is less than 30 ha, while in the states of Nevada, Montana and Wyoming is more than 700 ha. Similarly, the scale of production significantly differs between farms. Annual sales of nearly 1 million of farms do not exceed USD 5,000, while about 150,000 farms sell products worth more than USD 500,000.

US agriculture is a leading producer of many agricultural products. In 2018, according to FAO data, the USA produced 30% of the global supply of corn for grain, 35% of soybean, 56% of cranberries, 37% of blueberries, 59% of almonds, 33% of hops and 43% green beans. Similarly, in animal products the US is an important producer. In 2018, it produced 18% of beef, 17% of chicken meat, 10% of pork, 45% of turkey meat, 15% of cow milk and 8% of eggs. The multiplicity of directions of agricultural production in which the US is a key world producer is one of the reasons why it is the largest exporter of agricultural products. In 2017, the USA accounted for nearly 10% of the world's agricultural export that is over USD 141 billion.

The U.S. agricultural policy – Farm Bill 2018 covers the period 2019-2023 and has a budget of USD 428 billion. This amount includes social policy instruments from the Supplemental Nutrition Assistance Program (SNAP), under which the poorest citizens receive money to purchase food. In total, this group of instruments accounts for over 75% of the funds allocated to the Farm Bill 2018.

Among the groups of measures closely related to the agricultural sector and creating the federal agricultural policy in the USA, three should be mentioned: agricultural insurance, production support, and agri-environmental activities. They are responsible for 9%, 7% and 7% of the total funds allocated under the Farm Bill 2018, respectively. For rural development, organic farming, renewable energy or research and development only about 1% of funds is allocated.

Agricultural insurance is the largest group of measures in terms of resources allocated. They are directly related to the support of risk management. The measures of the production support group are also strongly related to risk management. For the three most important programs, Agricultural Risk Coverage (ARC), Price Loss Coverage (PLC) and Dairy Margin Coverage (DMC), producer support is contingent on unfavorable conditions on agricultural markets. In particular, it concerns a drop in the prices of agricultural raw materials, or unfavorable shaping of the price ratio between raw materials and means of production. These instruments can be defined as non-insurance risk transfer instruments.

ARC and PLC are managed by the Farm Service Agency (FSA). There is no fee to participate in these programs. Their purpose is to make payments in the periods when prices of agricultural raw materials fall (in the PLC program) or when the average profitability in the region decreases (ARC program). The discussed programs do not interfere with insurance, but only supplement it.

ARC and PLC are focused on preventing small reductions in yields or revenues. They offer payments in the case of relatively small drops in revenues and the value of payments received is small. A farmer can only participate in one of these two programs in a given year.

In the PLC, the receipt of payments depends on the price changes in the agricultural commodity markets. The value of the payment is equal to 85% of the value of the product determined on the basis of the historical results of individual crops in a given farm and the difference between the average annual price in the last financial year and an effective reference price.

In ARC, the receipt of payments is not directly dependent on the price level in the domestic market, but on the average amount of revenues recorded in a given region (county). Disbursements occur when the average level of revenues is lower than 86% of the benchmark value. The maximum value for payment applies when revenues are equal to 76%. Regardless of how much lower the revenues are, the payments is always 10% of the average historical revenues in the region.

Noninsured Crop Disaster Assistance Program (NAP) is aimed at producers of those crops that are not covered by insurance under the subsidized agricultural production insurance program. NAP offers limited coverage only at the time of losses in production of 35% and taking into account up to 100% of the market price of the produced agricultural raw material.

Another non-insurance instrument is the Farm Safety Net: Dairy Margin Coverage Program (DMC), which is a voluntary risk management program for U.S. dairy farmers (FSA, 2019a). It provides support when the difference between the national average of revenues from milk production and the costs of its production (margin) is lower than that indicated by the participating producer.

In parallel to the Milk Producer Margin Guarantee (DMC) program, U.S. agricultural policy offers dairy farmers the opportunity to participate in The Livestock Gross Margin for Dairy Cattle (LGM for Dairy Cattle) and Milk Gross Margin insurance. (The Livestock Gross Margin for Cattle - LGM for Cattle (RMA, 2020a). This program is administered by the Risk Management Agency and offers protection against gross margin loss in milk production. Gross margin is defined as the difference between the value of milk and the costs of feeds related to its production. Compensation is paid when, at the end of the insurance period, the guaranteed gross margin is greater than the margin calculated on the basis of actual market prices recorded for the insurance period. The guaranteed gross margin corresponds to the expected gross margin calculated from using the price of milk and the price of basic fodder registered on the futures markets for the period covered by the insurance, possibly reduced by the decision of the agricultural producer by the part not covered by the insurance (which reduces the insurance rate).

Margin insurance programs also cover producers of slaughter cattle (Livestock Gross Margin for Cattle) and pigs (Livestock Gross Margin for Swine) for which margins are calculated at the level of an animal head in the

corresponding age category, taking into account the expected weight and feed costs (RMA, 2020b). Margin insurance programs are particularly attractive to smaller producers who, due to the scale of production, are excluded from purchasing options to sell products and purchase feed using futures markets. The margin insurance program takes into account the differences between the expected and actual prices on agricultural markets.

Support for combating losses due to specific diseases is provided for in the Livestock Indemnity Program (LIP). Losses eligible include animal deaths caused by adverse weather conditions, certain diseases, wildlife attacks, and livestock price reductions due to the mentioned events (FSA, 2019b). Compensation is based on domestic payment rates of 75% of the species' market value as announced by the USDA Secretary of Agriculture for all states. The program does not take into account quality and production intensity differences.

The Emergency Assistance for Livestock, Honeybees, and Farm-Raised Fish Program (ELAP) covers losses due to animal diseases, certain adverse weather conditions, blizzards and recognized fires. considered catastrophic by the Ministry of Agriculture (USDA Secretary of State decision). The basic ELAP payment rate corresponds to 60% of the losses incurred for livestock feed. For losses related to the losses of animals, including fish and bees, the basic rate corresponds to 75% of incurred losses. The payment rates may be increased up to 80% if in a given year the total number of payment applications in the program is lower than the agreed spending limit.

Another interesting solution are insurance policies that are collectively assigned to the Rainfall Index group. It includes Annual Forage insurance. They are targeted at farmers who produce livestock based on self-produced fodder and grassland (RMA, 2018). The program relies on rainfall information collected by the National Oceanic and Atmospheric Administration (NOAA) to identify possible water shortages in agricultural land intended for forage production, including winter crops. By comparing the current rainfall index data with the multi-annual averages for a given area in individual months, potential losses in feed production and the amount of compensation for the farmer are calculated. Participation in the program is voluntary. The program includes catastrophic (CAT) and supplementary (RPUB) insurance. The producer decides on the level of supplementary protection in the range 40-90% of the average historical total rainfall, the productivity ratio of the land to the level of 150% of the average for the region and indicates the months the protection should apply. The insurance payment is triggered when the sum of rainfall is below the upper level of the range covered by insurance, in proportion to the difference between the actual rainfall recorded in the region and the declared level of protection for a given month and the rate of productivity.

Area Risk Protection Insurance (ARPI) is another group of insurance policies. It includes Area Revenue Protection (ARP) and Area Yield Protection (AYP). The basic feature that distinguishes this type of insurance from a number of other policies is the fact that the subject of insurance is not the production carried out by individual agricultural producers but the average values of revenues or yields observed in the region. The payment of the compensation does not take place in the event of the occurrence of the events

specified in the policy at an agricultural producer, but in the event of a decrease in production results by a wide range of agricultural producers in a given region.

The coronavirus pandemic has not significantly affected the functioning of the US producer risk management support system. However, the USDA has introduced a number of minor changes to reduce the burden of sanitary requirements. The most important of these include allowing agricultural producers to send the necessary documents electronically, extending selected deadlines for sending the necessary reports and reports, and loosening some of the requirements related to the control of agricultural producers. Details can be found on the website devoted to changes caused by the need to maintain more stringent sanitary rules. Still no fundamental changes were implemented since neither side of U.S. subsidized insurance program proposed any reforms due to the COVID-19 pandemic.

4. Discussion

The COVID-19 pandemic has disturbed the functioning of the food sector. These constrains have been due to "isolation policies, self-policing, or an economic recession" (Mishra et al., 2021). The assessment of the correctness, completeness, and timeliness of the COVID-19 response of risk management systems operating in the US and Canadian agriculture can only be a preliminary one. The pandemic is still in full swing so the further impacts on farming and food system are still to be seen. Therefore, it is worth to try to assess this early response in the context of the assessment of the whole system's capacity to strengthen resilience of farming.

The volatility of food production and food prices has been growing in recent years as a result of climate change induced volatility of agricultural production and other factors. The resilience of food system was examined by the pandemic. This test proved that generally the sector ensured the availability of food (Deaton, Deaton, 2020). Yet, certain parts of the whole system were put on hold due to the lockdown restrictions that stopped the normal functioning of transportation and cross-border trade. Also the segment of eating out was hardly hit, for example in Canada, by the imposed restrictions (Goddard, 2020), which accounted in 2018 for 54% of the food and alcohol expenditure in Canada (Hailu, 2020, tab. 1). As stated by Hobbs (2020, p. 176), "what we have learned, (…), is that vulnerabilities exist, particularly with respect to logistics and distribution in the presence of unprecedented shocks to the system".

Already in March the US Department of Homeland and Security named workers in 14 sectors "essential critical infrastructure workers". These sectors included food and agriculture to safeguard availability of food. Yet, the working conditions on farms and processing facilities resulted in a significant number of COVID-19 outbreaks and thus, workers in this sector became the worst hit by the pandemic after medical employees (Farnsworth, 2020, p. 1). To limit the spreading of the illness and reduce the burden on the industry and workers themselves a paid sick leave was introduced.

In the US, as in Canada and other countries, significantly affected were farms and food processing factories directly or indirectly serving eating out and hospitality sectors. Among food manufacturers 48.8% reported a large negative effect of COVID-19 on their businesses (Hughes, 2020, p. 4).

According to Ker (2020, p. 1) in relation to the Canadian agricultural risk management system, "the underlying structure of the BRM program was developed decades ago and certainly not with any thought to the possibility of a global pandemic". Moreover, the farm sector in Canada and US "is in a relatively good position to self-insure against any shallow loss that may occur as a result of COVID-19" (Ker, 2020, p. 6). This shows that the presence of the current risk management system and the income situation of farm households do not call for additional policy instruments. Yet, this conclusion may change if agricultural sector or certain parts of it are seriously adversely affected by the recession caused by the COVID-19 pandemic.

As "the COVID-19 pandemic provides a stark example of how adverse events outside of agriculture can affect the sector" (OECD, 2020, p. 12), it is worth assessing the readiness of risk management system to respond effectively to such events. It seems that the quick reaction of both Canadian and the US systems shows that they are prepared to act. Yet, the long-term impact and the long-term reaction are still to be seen.

5. Conclusion

Both the Canadian and US agriculture are highly developed sectors with a significant global outreach. In both these countries risk management system plays an important role in the agricultural policy. However, the architecture of both of these systems as well as farming sectors is different.

The US agricultural policy is strongly focused on supporting risk management by domestic agricultural producers. This is evidenced not only by the multiplicity of instruments subordinated to this goal, but also by the high level of costs related to these tools. The system of subsidized insurance of agricultural production is the most expensive element of the US agricultural policy. Within its framework, the federal government, in cooperation with private insurers, offers agricultural producers a number of insurance instruments aimed at stabilizing farm revenues.

Canadian agricultural policy is more diverse than the US one. Yet, within the consecutive Canadian Agricultural Partnerships authorities at federal and provincial levels apply different instruments to strengthen agriculture and agri-food sector. An important part of this policy are Business Risk Management Programs co-financed by both federal and provincial governments.

It is needed to emphasized that both programs were designed to cope with much more common threats than the COVID-19 pandemic consequences. The biggest sources of income drops in agriculture are production and price risks. The pandemic did not affect directly supply or demand sides of agricultural commodities markets. It did not created events that could be an excuse to start reimbursement within the classical production or revenue insurance plans. The observed disruptions of market chains were so far short-termed. This kind of incidents could only impact the U.S. whole revenues insurance plan or Canadian safety net programs. However they operate on a yearly basis. Since

there is no evidence that the COVID-19 pandemic significantly affected agricultural commodities or input prices, it seems that no special compensation will be needed.

The pandemic has shown that even the most developed systems of risk management in agriculture are not fully prepared to cope with such extreme events. Yet, the impact (so far) of the pandemic of COVID-19 has not torn the food chain. It only disturbed normal functioning of certain parts of it.

Despite the pre-prepared tools for managing income fall resulting from COVID-19, the agricultural risk management systems in both Canada and US reacted swiftly and increased the As "the COVID-19 pandemic provides a stark example of how adverse events outside of agriculture can affect the sector" (OECD, 2020, p. 12), it is worth assessing the readiness of risk management system to respond effectively to such events. It seems that the quick reaction of both Canadian and the US systems shows that they are prepared to act. Yet, the long-term impact and the long-term reaction are still to be seen.

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