

COVID-19 PANDEMIC - A FACTOR OF GLOBALIZATION IN AGRICULTURE, FOOD AND ENVIRONMENTAL PROTECTION

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Abstract: *Pandemics are disrupting the global food supply chain. The 21st century has seen the frequent emergence of natural and human disasters, including droughts and pandemics. Together their impacts can be exacerbated, leading to severe economic stress and malnutrition, especially in developing countries. Understanding how agricultural risks interact in identifying appropriate policies to address them together and separately is important for maintaining a strong global food supply. Here we assess the impact of disasters such as the Covid-19 pandemic in the context of food and agriculture and environment. The poorest countries with the least responsibility for climate change are also the ones that will be hardest hit, but they also need funding to help them make the transition to a sustainable economy. This requires a degree of cooperation that countries around the world seem reluctant to offer. For example, in the Covid-19 crisis, we saw that the poorest were the most affected.*

Keywords: *COVID-19, Policy, Trade.*

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INTRODUCTION

Globalization has a long history, starting with the Silk Roads (1st century BC - 5th century AD and in the 13th-14th centuries). The first Silk Road marked the introduction of long-distance trade, when Chinese products first arrived in Rome. The present period has been called globalization 4.0, in which markets are dominated by China and the USA. The main features are e-commerce and digital services. However, the negative aspects of globalization are becoming more frequent, of which deforestation and pollution are two of the main environmental concerns Barry (2020).

Major epidemics and pandemics can occur spontaneously and have a high degree of uncertainty, which presents many urgent challenges. The first challenge is to identify the causes behind the pandemic and to find ways to monitor and prevent it. In general, research is required to determine the cause of the disease, the factors that influence its spread, the victim identification test method, and medical care to cure victims and prevent their spread. The second obstacle is the execution of the solution. Developing and manufacturing successful samples, developing protocols for monitoring, tracing, isolating and treating infectious persons, and creating and distributing vaccines, once available, is time-consuming (Fernandes, 2020). Meanwhile, halting or stopping the spread involves the

introduction of social isolation procedures, including the closing of restaurants, bars and theaters, which may cause disturbances to food consumption, processing and transportation.

The Covid-19 crisis that erupted in early 2020 took many people by surprise, both because few initially expected such a situation, but also because few could have anticipated that such drastic policy responses would be necessary or even possible. At the time of writing, various bottlenecks around the world have already had significant implications not only for economic growth, but also for global supply chains, international cooperation, government policy, agriculture and the environment. In this paper we discuss some of the lessons we can already learn from the Covid-19 pandemic and what they suggest about how we might want to redirect some of our future research in environmental economics, agriculture or the food sector (Fernandes, 2020).

The World Trade Organization (WTO) published its annual trade prospects in April 2020, not long after the outbreak of the Covid-19 virus. Director-General Azevêdo said that "the numbers are ugly" (WTO, 2020). In its updated global economic outlook (IMF, 2020), the IMF estimates that world GDP could fall by 4.9% in 2020. Alarming figures on international trade are also found by Barry (2020). The pandemic is estimated to lead to a reduction in world trade of between 13 and 32%, a decline that exceeds that caused by the global financial crisis of 2008-2009 (Rizou et al., 2020). In order to achieve a so-called V-shaped recovery and against the background of an increasingly crowded trade war between two major world powers, the United States and China, it is important that post-pandemic governments do not return to further rounds of protectionist, but with new solutions that increase the prospects for a beneficial trade.

AGRICULTURE AND FOOD SECTOR

Most of the economic impact of a pandemic could emerge during a time of constrained operation until finding a cure or extinguishing the virus. Constraint practices may be due to exclusion measures, self-policing, or economic crisis. According to Guan et al. (2020), most countries were trying to avoid the spread of COVID-19 by limiting business activities and movement with travel bans, lock-downs and other bans on companies. Countries that have acted sooner and introduced more drastic policies have been able to shorten the length of the restrictions and minimize economic harm. The dynamics of disease spread through countries suggest mutual dependence, and the reduction of economic activity and disease control in one state benefits others.

Restrictions on commerce and slower travel across borders have limited supplies. The transition from food purchases from restaurants and other institutions to home requires adaptation by food processors and retailers, including packaging changes (Hsiang et al., 2020). Farmers have been forced to adapt to changing labor conditions and market changes. Restaurants, producers and other food supply chain connections that have been reluctant or unable to adjust to evolving demand or meet social distance criteria would incur major losses. On the other hand, food distribution systems have been extended so that some areas of the food industry will benefit from these reforms. Increased concentration in the food industry is a potential outcome of the COVID-19 pandemic. At the same time, unemployment among employees in the food industry has risen significantly. As many

informal workers around the world are, their ability to benefit from the compensation systems implemented in response to COVID-19 is minimal (Kerr, 2020).

Table 1 The influence of globalization on agriculture and food

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| The consequences of globalization in agriculture and the food sector | Countries that are deficient in some products will be able to meet their needs by importing from other countries. |
| | Reducing the volatility of agricultural product prices. |
| | Small farmers with low labor productivity will disappear. |
| | The countries that produce agricultural and food products, the more they trade, the better their standard of living will be. |
| | Increased global income and barriers to reduced investment will lead to growth of foreign direct investment, which thus accelerates economic growth in many countries. |
| | People with a low standard of living would benefit from the globalization of agriculture. |
| | Globalization will increase the efficiency of food production, thus lowering prices and being accessible to any social category. |
| | The globalization of agriculture leads to an increase in production and an improvement in the economic situation of farmers around the world. |
| | The economies of the cooperating countries well with the international economy will grows steadily much faster than those countries that are trying to protect. |

Source: made by the author after <http://www.preservearticles.com>

Although the COVID-19 pandemic is still continuing, it has already given some generalizable lessons about how pandemics can impact the agri-food sector. For example, constraints about travel across regions and social distances (shelter-in-place) policies affect performance of the food supply chain through short-term supply and demand shocks in the agricultural and food industries (Espitia et al., 2020). Social distancing has contributed to panic purchasing, storing and increasing consumption of essential foods such as eggs and flour. Galanakis (2020) indicates that the pandemic may also raise demand for food items that are assumed to strengthen the immune system. Around the same time, there have been major improvements in availability. Some regions may experience a reduction in migrant farm labor, which may have an effect on harvesting and decrease the demand of fruit and vegetables (Kerr, 2020).

Overall, the longer the social distance persists, it is predicted that many companies in the food sector will incur losses which will raise the risk of defaults and bankruptcies, resulting in more unemployment. Hobbs (2020) found that food prices in Canada have not improved much as a result of COVID-19 and the subsequent policies. Food insecurity in the U.S. A. has risen, partially due to difficulties in obtaining food from the National School Lunch Program due to school closures. Mahajan and Tomar (2020) say that the availability of vegetables, fruit and oil in India has decreased by 10% but has a marginal effect on prices. The further the origin of the commodity from the consumer, the lower the accessibility. Overall, evidence shows that private supply chains have been able to respond to most of the COVID-19 impact. The fall in demand resulting from a decrease in economic activity is likely to affect the agricultural sector. In addition to supply, pandemics, unlike natural disasters, may have an effect on food demand, placing added pressure on the food supply chain (Laborde et al., 2020).

The pandemic is causing drastic improvements to food production practices to protect against the spread of the virus and potential diseases. Technology and the use of real-time data will minimize disturbances in the food supply chain by eliminating delays and enhancing shelf life (Reardon et al., 2020). Use of information technology for distribution of food has grown and improved and is likely to increase in the future, especially with the growth of delivery services, which will remain a key element of the food supply chain. Concern for future potential pandemics could result in increased automation in harvesting, processing and distribution, leading to a shorter and more diversified supply chain and an expanded plant-based meat market. Innovation and disaster-driven technical progress will increase the sustainability of food production, creating environmental benefits (Rowan and Galanakis, 2020).

Achieving a balance of trade and domestic production in food systems is an ongoing challenge driven by economic efficiency, consumer choices and social and political preferences (Mahajan and Tomar, 2020). Conditions that create increased fear or uncertainty about food availability trigger new debates about how best to achieve society's goals and meet food needs. Especially family farms will suffer along with others from disease and loss of productivity due to the COVID-19 pandemic (Siche, 2020). More importantly, it is concerned about the ability of capital to flow smoothly to farmers and support businesses along the supply chain.

From the pandemic period are essential lessons to learn for climate change policy and agricultural sustainability. Minimal initial expenditure in mitigation measures involves expensive changes, resulting in substantial loss of life and economic well-being. The World Food Organization and other relief agencies through provide emergency food aid, but they need financial resources and access to food supplies. The resolution of regional hunger problems could be subject to concerns about the spread of infection during pandemics. Robust emergency relief services are critical for alleviating the economic and public health implications (Hsiang et al., 2020).

Closing trade borders makes it more difficult for any nation to buffer the shocks of a pandemic. The intensity of food supply during this pandemic indicates that, amid isolation policies, global supply chains continue to work. Even if the increase in short-term demand but also the increase in challenges to ensure the safety of workers, the availability of food is expected to be stable over the next 8 months. However, temporary food supply shortfalls and increased prices for certain food categories are likely to continue (Kerr, 2020). This cannot be determined by the unprecedented nature of this global tragedy. What we do know is that the extent of the COVID-19 pandemic requires that it be studied in detail in terms of the variables that have an impact on food security and how favorable policy interventions are.

The Covid-19 epidemic should make us reconsider the principles of globalization in relation to supply chains. She emphasizes that globalization has taken place in a world of global monopolies and without sufficient regulation to undermine vital sectors such as the food sector (Siche, 2020).

ENVIRONMENT

There are important lessons to be learned from Covid-19 for environmental economists. Decreased incomes and production and the possible large-scale shift in global

production will have significant effects on the environment. Economists have been aware of these potential environmental issues that influence trade (Allan et al., 2020).

The well-known book by Copeland and Taylor (2013) on trade and the environment provides a beautiful account of the worries that have existed since the early 1990s. The key questions they address are: (1) How the growth of economic activity induced by international trade affects the environment; and (2) How does environmental policy affect a nation's business model? They discuss the paradise of pollution versus the hypothesis of endowment of factors (Barbier, 2020). Since then, numerous studies have investigated these issues. As usual in economics, the answer is that opening up to trade in the absence of externalities tends to be beneficial, but that "correct" economic policy is needed to achieve positive welfare gains in the case of externalities (Burns and Tobin, 2020). However, to explain the effects of the Covid-19 pandemic, we need models in which the interconnection of production chains is visibly present. Moreover, the current Covid-19 crisis is mainly characterized by reduced human mobility, with consequences for the tourism and transport sectors. Less tourists may lead to less damage to global biodiversity, but it could also show that less eco-tourism will mean that it is no longer "profitable" to continue to protect previously protected areas, which are important for biodiversity. A clear benefit of lower tourism is that there will be less CO₂ emissions as a result of reduced air travel (Cole et al., 2020b).

Reducing trade also means that less road, sea and air travel is needed to transport goods and services. A crucial question is whether these specific effects will be long-lasting, or only temporary. A related issue is the huge subsidies going to the aviation sector. Should these subsidies be combined with greening the business and, as France demands from AirFrance / KLM, should domestic flights be reduced in favor of high-speed trains? Research is extremely necessary to estimate the costs and benefits of such a policy. Probably one of the biggest lessons we could learn from the comprehensive blockade and cessation of large areas of economic activity is how small the reduction in greenhouse gases has been.

The International Energy Agency expects a 6% reduction in global carbon emissions in 2020. This is equivalent to the annual carbon budget of countries such as India. However, although this decrease is unprecedented as such, in order to maintain climate change at 1.5 °C of warming by the end of the century, we would need at least an equivalent decrease in carbon emissions each year from now on until 2050.

To date, stimulus plans in developed countries have been large and costly, but have mainly focused on supporting local economies, which are small and have very limited global ambition when it comes to issues such as climate change or community support international (Dergiades et al., 2020). Some countries are already in the process of directing their post-pandemic stimulus program towards a green transition and focusing their spending more strongly on sustainable investment. These proposed incentive packages have been called the New Green Deal (Elkerbout et al., 2020).

The broader macroeconomic debate is whether the stimulus of any color, green or brown, is inflationary or whether the crisis will cause a period of deflationary pressure when governments will be able to continue the process of monetizing low-impact debt (Goodman-Bacon and Marcus, 2020). We could imagine that the fiscal multiplier, with interest rates at historic lows, is positive, so that additional spending will lead to further growth (Gruszynski, 2020). The question is what kind of technologies are favored by these

low interest rates, traditional, dirty or green and clean technologies? Many green technologies are still considered to be developing, which means that infrastructure or market depths may be lacking for rapid and widespread deployment. While the additional debt taken to deal with the current Covid-19 crisis has been used in countries with a social security system to minimize rising unemployment, and countries with a more market-based approach, such as the US, have seen an increase in unemployment to an all-time high of 14.7% in April 2020 (Fernandes, 2020). This again raises questions about the distribution aspects of a policy to stimulate a new green agreement, such as the one proposed by the EU (Schumacher et al., 2020). An analysis of how the New Green Deal will have an impact on employment and the various aspects of the distribution of these new jobs between skilled and unskilled, high wages and low and clean or dirty wages, would be useful (Elkerbout et al., 2020).

As Goodman-Bacon and Marcus (2020) point out, given the differences in the timing and locations of different policies, a difference-from-differences (DD) approach seems to be the most appropriate research concept to estimate the causal effects of interventions (such as blockages and social distancing). The same argument applies to studies that want to estimate the potential environmental impact of Covid-19. The Goodman-Bacon and Marcus (2020) summarized briefly here:

- Combined policies - when other policies are introduced at the same time or during the lock-in, such as the reduction of environmental enforcement activities, even if the lock-in was instigated at different times;
- Reverse causation - the timing of any blockage may depend on previous rates of infection;
- Voluntary precautions - people see what happened in other cities of the countries and have changed their behavior preventively. For example, people may drive less in the face of a blockage because they self-isolate or are generally cautious and therefore reduce emissions below normal levels before the blockade is introduced;
- Anticipation - when governments announce that a blockade will take place before the effective date. In the context of a story of air pollution and, as opposed to voluntary concern, it is possible for people to increase how often they drove before the blockade as a way to stock up or make final visits to relatives, worsening, thus - blocking emission levels, so that the blockage seems to have a stronger emission reduction effect;
- Spillovers - neither the virus nor the emissions respect national and state borders. As such, pollution in a city can be affected by neighboring cities, regardless of their state of blockade.

Global economic growth projected in 2020 would be significantly lower if governments around the world did not unconsciously increase their debt levels as a means of financing social security measures. As a result, in advanced economies, general government loans rose to 10.6% of GDP. According to the spring 2020 version of the EU's economic forecast, the EU's aggregate government deficit is projected to increase from 0.6% of GDP in 2019 to 8.5% in 2020, with a similar number for the rest of the world (IMF, 2020). The money borrowed now, at some point, must be repaid. Indeed, it may also be possible that those who borrow the money are not the ones who pay it.

CONCLUSIONS

In the end, modern farming is a testament to the power of science. The advent of fertilizer, modern breeding, land management and irrigation has provided for an increase in human population and a longer life expectancy, with a smaller proportion of the population employed in agriculture. Pandemics, however, show human weakness and the weaknesses of our awareness. While these phenomena show the limitations of science, they also reflect the need for more scientific study and the importance of adhering to expert data. Science needs to help build risk governance strategies to better respond to such crises, including organizations, rules and skills that balance central and regional obligations in order to achieve socially positive results.

We have seen that a global crisis is easily disrupting international supply chains, which, among other effects, have already led to reductions in both trade flows and people in the world. What is the implication of this for both economic development and the quality of the environment? In particular, will we see an increase in pollution paradises or a return of dirty industry in developed countries? Will we see increased migration to developed countries that are better able to cope with many types of crises? Will this increase in migration increase the presence of the environment in the developed world?

There is a willingness to finance a green post-crisis stimulus, but there are problems with high levels of public debt and what determines what is really a greener or browner investment that deserves to be part of the stimulus. Moreover, it is not clear whether it is possible to design incentives in such a way as to reduce inequality, which was not taken into account following the 2008 financial crisis.

As a final, more personal note, we consider that one of the main lessons of the Covid-19 crisis is that it offers society the opportunity to promote a green transition faster than could have happened in other circumstances.

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