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New Corona Virus, Food Security and Identifying Policy Options

Abstract: Achieving food security for all has long been a major objective in public policy around the world, and even globally as enshrined in the contemporary UN Sustainable Development Goals. The onset of the COVID-19 pandemic of 2020 creates additional challenges to food policy-makers and the paper charts some key elements of response to these challenges.

Keywords: pandemic, COVID-19, food security, supply chains, policy.

1. Introduction

As of late-2020, the COVID-19 pandemic has sickened millions of people worldwide and is pushing the world economy into a depression comparable in severity to the Great Depression of the 1930s or World War II of the 1940s. COVID-19 has severely negatively impacted China, Europe and North America and, of particular concern in this paper, is spreading through Africa, Latin America, South Asia and South East Asia. Most governments in these regions are reacting by

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closing borders and enforcing social distancing. This is creating severe difficulties for the food security of billions of people.

As is elaborated below, the primary concern in this paper is ensuring that food markets remain open and functional, in spite of the obstacles and challenges imposed by social distancing requirements. Secondary concerns include: (a) enhanced provision of food assistance and social safety net protection, and (b) elimination of disruptions and export bans in international trade.

The objective here is to present information that governments can use to try to reduce the immediate and long-term cost of corona-virus policies on food security and resilience. The paper addresses policy options to reduce the impact of COVID-19 on:

- 1) Food access, supply chains, and agriculture,
- 2) Employment, income, and poverty,
- 3) Nutrition and health, and
- 4) Resilience and rebuilding.

2. Current public health policies that are widely used to prevent the spread of COVID-19

The major policies (e.g., FAO 2020a; Swinnen and McDermott 2020; Torero 2000a) involve imposing rules that reduce contact between infected people and those not yet infected. This happens at various levels, such as closing international borders to prevent the spread of people who are infected with the virus. Nationally, internal barriers are being introduced to prevent the movement of people and the disease from hotspots of infection. At local levels policies have sought to introduce requirements for social distancing of people to slow the spread of the disease. There is a continuum of social distancing policies from bans on large crowds to shelter in place. The bans on large crowds typically include no big sports events, political rallies or religious gatherings, closing schools and universities or restricting them to distance teaching, restricting the number of people in supermarkets and restaurants, at informal markets, and large factories. Shelter-in-place policies generally are intended to restrict all but “essential” movements to ease access to food and medicine.

As well as such distancing measures, policies have variously encouraged or obliged use of personal protection equipment such as face masks, so that the infected keep the virus to themselves better, and the uninfected are less likely to inhale aerosol organisms from others. The effectiveness of these policies naturally depends on individuals’ willingness to comply as well as the quality of the devices and the adequacy of their installation.

Many governments are also pursuing other policies to respond to a possible food-security crisis, such as managing government food stocks (procurement and distribution), in some cases assisted by the World Food Programme. Direct intervention in the health sector is also a major policy thrust, such as investments in rural and urban health information and infrastructure. While surely necessary, this likely has the effect of diverting scarce government human, financial and physical capital for agricultural development to a short-term coronavirus response.

3. Food supply chains and impacts on components

The framework for this analysis of the impact of the pandemic on food security is the system of food supply chains (FSCs) that provide access to food, and jobs and income for business owners. The work of Reardon et al. (2019) emphasises three stages in the development of FSCs: traditional, transitional and modern. Such chains can also be divided in many other ways, such as into FSCs for staple commodities and for high-value commodities.

Today most urban and rural consumers now depend on markets. In contrast to the common conception of subsistence agriculture economies as largely comprising smallholders who produce their own food, today some 80% of food (by value) is purchased, even in low-income countries such as India and Senegal (Reardon et al. 2019). Modern FSCs that are dominated by large processing firms and supermarkets, capital intensive, with relatively low labour intensity of operations constitute roughly 30%-50% of the food systems in China, Latin America, and South East Asia, and 20% of the food systems in Africa and South Asia. Transitional FSCs stretching from rural to urban areas are fragmented and dominated by thousands of labour-intensive small and medium-sized enterprises (SMEs). *Transitional* FSCs dominate food systems in the developing world, with 50%-80% of the food supply in economies of developing Asia and Africa. *Traditional* FSCs make up only some 10% of food supply in Africa and South Asia.

Because of the dominance of SMEs, this discussion of COVID-19's impact on transitional FSCs is focused on the SMEs that will be most adversely affected. They "tend to be found in clusters such as dense sets of food processing SMEs, scores of meal vendors at truck stops, and dense masses of wholesalers and retailers in public wholesale markets and informal markets." (Reardon, Bellemare and Zilberman 2020). These are precisely where governments will target their social distancing policies. In addition, the city and regional barriers to movement of people, food and agricultural inputs will affect transitional FSCs, both because taken together that segment has a bigger share of the food and inputs, and because far more people depend on it for employment.

The supply chains for staples (e.g., wheat, maize, soybeans and oil seeds) and high-value foodstuffs (e.g., fruit, vegetables, fishery, poultry) are also affected differently by COVID-19. Torero (2020b) focuses on modern FSCs but has useful insights into how labour issues affect supply chains. Modern staple commodity production is generally rather capital-intensive even in most developing countries and the labour shortage issue resulting from the coronavirus-related restrictions on movement has less impact on production. However, the logistics to distribute the commodities are affected, hampering food transportation across cities, provinces, regions and countries.

The high-value commodities require a large amount of labour to produce. So they are substantially affected when employees get sick or local and migrant labourers are not able to travel due to lockdowns. Logistical barriers that disrupt the food supply chains affect the high-value commodities even more because of their perishability. The high-value supply chain includes food processing plants, which also tend to be labour intensive. Until recently, many of the sorting and packing lines did not comply with most of the recommended social distancing requirements.

In summary, the real threat to food security is the disruption to food systems that are increasingly complex. There are several effects to watch out for, including: (a) disruption in the operations of rural (no longer subsistence) and urban markets due to social distancing restrictions, often exacerbated by consumer behaviour, from crowding to hoarding; (b) disruptions in the supply logistics of bringing food to both rural and urban markets; (c) disruptions in food systems employment, livelihoods and SME business viability either directly from illness or indirectly from restricted operations; (d) possibly increased rural food demand as international and domestic migratory workers return to their villages of origin. These have different implications for rural and urban mitigation policy, and different effects for storable grains and pulses versus cold chain and fresh perishables. These are due to: (i) differences in supply chain operations and therefore the impact of disruptions, (ii) differences across food groups in their dietary roles, and (iii) differences in policy options to mitigate disruption.

4. Rationale for the choice of policies

This section offers some reasoning behind the policies advocated below.

4.1. Maintaining open international borders for food and medicines

Closed borders due to COVID-19 is a particularly difficult challenge for small countries in which imports play a large role in food consumption and farmers

depend on imported inputs. Towards mid-2020, most borders in developing countries were closed to the movement of people but were open to the movement of goods. Some countries also restricted imports and exports of some goods but make exceptions for essential commodities such as food, medicines and medical equipment. Even when the trade in goods is allowed, movements are slowed because the truck drivers may be detained or prohibited from travelling with their vehicle. Ports can also be closed or slowed, through social distancing, lockdowns and worker illness. The diverse specifics of particular country situations are illustrated in the several cases included in Swinnen and McDermott (2020) and for brevity no attempt is made here to detail such specifics.

If trade in food is restricted (because of lockdowns, export bans or disruption through illness-induced labour shortages), there are risks of food shortages and high food prices for importing countries, losses of income from exporting, losses of jobs in marketing and logistics. Closed borders can reduce the availability of some agricultural inputs such as fertiliser or seed, which may result in lower production in future growing seasons. It can also reduce the availability of farm labour, which is of growing importance in many places, including much of African farming.

Closed borders reduce the incomes/jobs of women and men involved in informal trading (including cross-border trading). Disruption of labour mobility means losses of jobs for farm labourers who cannot get to their usual jobs across the borders. The desired situation would be to maintain the cross-border movement of essential commodities such as agricultural inputs, food products and medical supplies. Additionally desirable would be opening the movement of healthy farm labour across borders as early as is safe and possible.

The policies required to keep the market chains for food, agricultural products, agricultural inputs and medical equipment all moving could also involve removing or reducing tariffs and non-tariff barriers to imports. In addition, ideally, export bans would be eliminated by countries with a surplus of essential commodities, and export taxes on these commodities would be reduced or scrapped. Various initiatives could be considered to facilitate the movement of farm labour, including group-specific visa programmes and investment in facilitating initiatives such as screening would-be worker temperatures and conducting diagnostic tests for the corona virus. This can readily be done by the private firms involved, as they work to comply with the requirements of the relevant health authorities.

4.2. Maintaining open internal/national borders for food and medicines

The internal barriers to movement of people, trade and transport between regions constitute perhaps the most important immediate source of economic

problems during a coronavirus pandemic because of the importance of transitional FSCs, as described in section 3. Regional officials block borders to prevent the spread of the virus. If regions have excess food, they may hoard it to protect their local food supply. Often “green” channels officially exist for agricultural goods and inputs, but barriers to movement of people also restrict movements of goods and agricultural labour. Enforcing social distancing (see below) can lead governments to close down crowded but essential markets along the supply chains. Fear of infection can stop merchants and truckers from going to hot spots of the virus. Women who work in informal trading, women-owned small businesses (e.g., food shops) and women who care for the afflicted (families and in the health sector) are especially vulnerable.

One essential response of governments is to develop “green” essential commodity channels for the movement of food, inputs and medical supplies. But, in the face of the challenges mentioned above, governments will need to identify bottlenecks in the supply chain and then intervene in specific markets. Bottlenecks caused by regional government decisions will have to be monitored and negotiated or eliminated by the central government with the help of the police or army as necessary to ensure movement of essential commodities. The government logistics corporations and army transportation can, with proper protection from the virus, make up for some of the reluctance of (or constraints on) private drivers to supply food in infected areas. Examples include actions in China to feed Wuhan (Zhong 2020), those of the Indian government to move food and essential goods across state borders by issuing e-passes and setting up service platforms such as KisanRath,¹ and Rwanda’s efforts to get agricultural inputs, including fertilisers, to the rural areas where they are needed (AGRA 2020).

Financial support for small marketing, storage and logistics businesses with some of the funds earmarked for women entrepreneurs can be useful for keeping these transitional FSCs open. In India, besides providing guarantees to commercial banks to support their SME lending, there is also enhanced direct lending to SMEs.² In South Africa the Business Growth or Resilience Facility aims to enable continued participation of SMEs in supply value-chains, in particular those who manufacture (locally) or supply various products that are in demand due to COVID-19 pandemic.³

¹ <https://www.financialexpress.com/industry/technology/kisan-rath-mobile-app-features-benefits-of-app-to-help-farmers-during-coronavirus-lockdown/1933220/>

² <https://www.bbc.com/news/world-asia-india-52640807>

³ <https://home.kpmg/xx/en/home/insights/2020/04/south-africa-government-and-institution-measures-in-response-to-covid.html>

5. Social distancing

Social distancing policies, which are really policies intended to have people maintain a safe physical distance from others who may be infected, are being implemented in nearly all countries in Africa. Schools and universities are closed or have moved online. Big sporting events, political meetings and religious ceremonies are mostly closed. Governments try to limit the number of people at or even close to informal markets, wholesale markets for agricultural inputs and outputs, restaurants and bars. Some informal markets and supermarkets have to remain open but operators must be required by local governments to make rules and provisions for safe functioning. This will mean that operators ensure that the number of customers is limited and also that all staff in public areas are obliged to wear breath-filtering masks. All such novel arrangements are especially challenging when such markets are informal and many of the operators are unregistered. Local police departments will need urgent training as well as ample personal protective equipment (PPE) to be able to enforce such emergency restrictions on small businesses.

The desired policies are to keep markets safe and open and, when possible, move to mobile groceries/markets/direct marketing/food cooperatives and more e-commerce for agricultural inputs. Introducing novel arrangements for delivery of foodstuffs from retailers to households may be facilitated by having appropriately trained extension workers equipped with mobile phones and knowledge of masking requirements and relevant distancing practices to assist SMEs to hire or equip new and existing delivery services. Government should designate employment in agriculture, food and logistics as *essential* jobs and focus on safe management practices, preventive masks and gloves, and health services for these groups. It is important to ensure limited closures of small processing and food service businesses and get them back in business quickly through financial support for SMEs where possible.

Possible policy interventions include training and provision of infrastructure for e-commerce, which includes e-commerce for buying and selling crops and livestock, improved e-commerce trading of agricultural inputs and provision of advice to agrodealers and strengthening electronic banking for commerce, but also providing unemployment benefits when these can be made available. The expansion of government supply of food in safe conditions with limited crowding will be useful where stocks and arrangements are in place, such as with the Public Distribution System (PDS) in India. Finally, as mentioned, it will be important to enable loans or grants to preserve SMEs and get them back in business, with a substantial amount of funds reserved for women.

6. Imposing Distancing: Shelter in Place

Shelter in place is the most extreme form of social distancing. It forces the whole society to stay at home except for workers in industries that provide essential commodities such as food and medicine, and for consumers who need to buy these commodities. This creates severe economic problems for poor day labourers and SMEs in the food chain. Agricultural labourers are not supposed to work and cannot move to locations where planting or harvest is underway, which reduces food production as well as labourers' income. Many kinds of non-farm rural and urban labourers in food markets and the logistics industry will lose their jobs, at least temporarily, and this will add to the difficulty of getting access to food for many where social protection schemes are inadequate. However, in countries with strong ICT, e-commerce will grow rapidly, creating jobs in preparing goods for delivery and delivering them.

Ideally perhaps, governments could supply people who cannot go to markets with food from their food stocks. They would ensure masks, testing and a healthy work environment for workers in essential jobs. For labourers who cannot move back to their homes, the government may have to provide safe, possibly temporary, housing. The government should help identify essential jobs in the FSCs and provide transport for people who need to move to meet labour shortages in essential industries. Government could also perhaps provide financial support for SMEs, and possibly specially focused arrangements for women entrepreneurs. Government support for ICT infrastructure would be important for expanding e-commerce, e-finance and monitoring government shelter in place and government food policies.

7. Managing government food stocks

In normal times, managing stocks of food is a normal activity in FSCs for the many actors involved, including the final consumers themselves who cannot afford to visit markets to provide each meal and thus must manage their household stocks sensibly. In some countries public agencies have been created to manage strategic stockpiles of key food commodities such as food grains that help to backstop the stocks normally held by private traders, and are typically released through national food distribution programmes, such as that managed by the Food Corporation of India. Over the years there has been much heated discussion of the management of such stocks: size of holdings, waste, cost, effectiveness of targeting food assistance, and parameters such as the Minimum Support Price that farmers receive when their harvests are acquired by the government. These debates are not

reviewed here, because of space considerations (but see, e.g., Saini and Kozicka 2014).

In abnormal times such as during a pandemic all the issues surrounding stocking at all levels come into play. Some involve policies developed by retailers to restrict the size of transactions in order to avoid hoarding by households. Others involve government policies on the release of strategic stocks and details of intended targeting, as well as replenishment of depleted stocks. Delivery to target populations clearly faces all the constraints to effective mechanisms noted in other market access challenges discussed above, as well as the fiscal challenge of supporting operations while scarce fiscal resources are deployed on other aspects of pandemic response. To the extent that replenishment of public or private stocks will involve importing materials, foreign assistance might prove to be helpful and perhaps even necessary.

8. Investment in soft and hard health infrastructure

Immense efforts have been underway on both the “soft health infrastructure”, such as providing advice on personal hygiene such as hand-washing and safe behaviour such as masking and distancing, as well as on the “hard” elements of infrastructure such as PPE and ventilators in hospitals and, in some cases, even new emergency hospitals. The focus of this discussion is on food security rather than on the mainstream health infrastructures that are receiving the bulk of attention.

On the “soft” aspects of food systems supporting health, a major theme is provision of sound nutritional information to help people make wise choices in their personal dietary decisions in their quest for household food acquisition, and those people concerned with providing direct food aid or food in institutional settings (e.g., Masters et al. 2018). These choices are more challenging than is usual, as food consumers struggle with the added constraints in markets imposed by the pandemic and the various policy and supply-chain responses discussed above. For commodities that are relatively labour-intensive, such as fruit and vegetables, increasing prices that are likely to be experienced will make dietary choices more critical and important to be nutritionally sound. Agricultural extension services must ensure they have cogent information to share with their clients and seek ways to do such sharing widely and effectively (especially engaging women managing household food “delivery”), using multiple media and ICTs (e.g., Anderson 2020; FAO 2020b).

On the “hard” side of the good health-support infrastructure, a key element of good practice is provision of clean water, not just for human intake and food preparation but for hygiene and especially handwashing, at home and also in and around food markets. Such water supply provisioning is tragically deficient in many

parts of the developing world, and water insecurity is strongly associated with food insecurity (e.g., Brewis et al. 2020).

9. Preserving human, financial and physical capital for agricultural development

Scarce development-assistance resources have long been devoted to creating and maintaining capacity of the knowledge system supporting the agricultural sectors of developing countries. In a time of increasing fiscal stress it is important to ensure the effective maintenance of what has been created, in order to sustain the ability to provide the services needed to underpin future growth of productivity in national food systems. Effective maintenance has many dimensions, from the continued health and safety of students studying in agricultural disciplines as well as their instructors, to avoiding interruptions in such multiple-year and season programmes such as crop improvement, including maintenance research to keep ahead of evolving plant pathogens and adapting to increasing heat and drought stresses. This amounts to recognising that investment in agricultural research is not only providing a service that has been found to be highly valuable in the past (e.g., Alston et al. 2009) but also an “essential” service going forward in the agricultural and food system.

Preservation of the human and physical capital must be achieved through pandemic times at both national and international levels. Effective preservation will necessarily involve much innovation in work practices, such as novel methods of teaching in remote modes and substitution of much travel by ICTs, such as video-conferencing. Such will add to the case for seeing reliable provision of internet access as another “essential” service to be protected and supported strongly, especially during pandemics.

10. Conclusion

Food security is a continuing challenge for humanity in areas rural and urban. Dealing effectively with it during a pandemic is a yet unresolved challenge in which cogent information may still be in too short supply. At the time of writing, in the absence of effective vaccines being available, many challenges persist, especially in provision of healthcare and welfare. Food insecurity issues have surely increased during the pandemic but the policies invoked have been remarkably effective in limiting these food-related impacts. This set of considerations has been assembled to provide an interim contribution to the on-going policy evolution of 2020 as nations struggle to respond. The rise of digital solutions during the pandemic has clearly been helpful and seems likely to be a significant contribution to welfare

even once the pandemic subsides. Policy responses have necessarily evolved during the pandemic and must continue to do so as it continues, and as its successors bide their time.

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References

- AGRA (Alliance for a Green Revolution in Africa) (2020). *Policy Response for Rwanda (COVID-19 Pandemic and its Impact on Agriculture and Food Security)*. https://agra.org/wp-content/uploads/2020/06/Rwanda-COVID-19-Policy-Response-Package_June-2020.pdf
- Alston J.M., Pardey P.G., James J.S., Andersen M.A. (2009). A review of research on the economics of agricultural R&D. *Annual Review of Resource Economics*, 1, 537–565.
- Anderson J.R. (2020). *Agricultural Extension Policy: A 2020 Re-Vision*. Working Paper. Rutgers University, Feed the Future Policy Research Consortium. New Brunswick: Rutgers University. <http://ru-fff.rutgers.edu/Outputs%20for%20webpage/Anderson%20WP%202020.pdf>
- Brewis A., Workman C., Wutich A., Jepson W., Young S. (2020). Household water insecurity is strongly associated with food insecurity: Evidence from 27 sites in low- and middle-income countries. *American Journal of Human Biology*, 32 (1), e23309.
- FAO (Food and Agriculture Organisation of the United Nations) (2020a). Several policy briefs. Rome: FAO. <http://www.fao.org/2019-ncov/resources/policy-briefs/en/>
- FAO (Food and Agriculture Organisation of the United Nations) (2020b). Extension and advisory services at the frontline of the response to COVID-19 to ensure food security. Rome: FAO. <http://www.fao.org/3/ca8710en/CA8710EN.pdf>
- Masters W.A., Rosettie K.L., Kranz S., Danaei G., Webb P., Mozaffarian D., the Global Nutrition and Policy Consortium (2018). Designing programs to improve diets for maternal and child health: estimating costs and potential dietary impacts of nutrition-sensitive programs in Ethiopia, Nigeria, and India. *Health Policy and Planning* 33 (4), 564–573.
- Post L.A., Argaw S.T., Jones C., Moss C.B., Resnick D., Singh L.N., Murphy R.L., Achenbach C.J., White J., Issa T.Z., Boctor M.J., Oehmke J.F. (2020). A SARS-CoV-2 surveillance

- system in Sub-Saharan Africa: Modeling study for persistence and transmission to inform policy. *Journal of Medical Internet Research*, 22 (11), e24248. <https://www.jmir.org/2020/11/e24248>
- Reardon T., Echeverría R., Berdegue J., Minten B., Liverpool-Tasie S., Tschirley D., Zilberman D. (2019). Rapid transformation of food systems in developing regions: Highlighting the role of agricultural research and innovations. *Agricultural Systems*, 172, 47–59.
- Reardon T., Bellemare M.F., Zilberman D. (2020). How COVID-19 may disrupt food supply chains in developing countries. In: J. Swinnen, J. McDermott (eds.), *COVID-19 and Global Food Security*, (pp. 78–80). Washington, DC: International Food Policy Research Institute.
- Saini S., Kozicka M. (2014). *Evolution and Critique of Buffer Stocking Policy of India*. ICRIER Working Papers. New Delhi: Indian Council for Research on International Economic Relations. <https://www.econstor.eu/bitstream/10419/176301/1/icrier-wp-283.pdf>
- Swinnen J., McDermott J. (eds.) (2020). *COVID-19 & Global Food Security*. Washington, D.C: International Food Policy Research Institute.
- Torero M. (2020a). *COVID-19 and Food Supply: A Four-Pronged Battle Plan for Countries*. Retrieved from: <https://maximotorero.com/2020/03/23/covid-19-and-food-supply-a-four-pronged-battle-plan-for-countries/> (accessed: 28 June, 2020).
- Torero M. (2020b). *Coronavirus Food Supply Chain Under Strain. What to do?*. Rome: FAO. Retrieved from: <http://www.fao.org/3/ca8308en/ca8308en.pdf> (accessed on 23rd of July, 2020).
- Zhong R. (2020). \$9 cabbages, emergency pork: Coronavirus tests China on food. *New York Times*, February 5, 2020. <https://www.nytimes.com/2020/02/04/business/china-coronavirus-food-prices.html> (accessed: 6 July, 2020).

Nowy koronawirus, bezpieczeństwo żywnościowe i identyfikacja wariantów polityk

Streszczenie: Osiągnięcie poziomu bezpieczeństwa żywnościowego obejmującego wszystkich ludzi od dawna jest głównym celem polityki publicznej w każdym kraju. Jest to także wyzwanie w skali globalnej, zgodnie ze współczesnymi celami zrównoważonego rozwoju ONZ. Początek pandemii COVID-19 w 2020 r. ujawnił dodatkowe wyzwania dla decydentów w dziedzinie polityki żywnościowej. W niniejszym artykule opisane zostały niektóre kluczowe elementy tych wyzwań i odpowiedzi na nie.

Słowa kluczowe: pandemia, COVID-19, bezpieczeństwo żywnościowe, łańcuchy dostaw, polityki.