



# Policy Brief

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## COVID-19's varied impacts on fresh fruit and vegetable (FFV) supply chains in Senegal

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### Key messages

- Larger agro-industrial companies in modern, capital-intensive supply chains were mostly able to weather the crisis with minimal disruptions.
- Smaller FFV actors in traditional supply chains faced substantial disruptions to the marketing of their produce, and to the supply of labor and inputs, with many smaller producers reducing their area for producing FFV.
- Early findings point to a severe impact on the availability and accessibility of nutritious foods, food insecurity, and hunger in the aftermath of the COVID-19 pandemic in Senegal.

Resilience of agri-food value chains (VC) has been an important subject of discussion during the COVID-19 pandemic. Good empirical evidence on this issue is limited because comparing value chains must account for variations in several factors (e.g. different commodities, different countries, etc.). In this policy brief, based on a research article published in *Agricultural Economics*, we focus on the early impacts of the COVID-19 pandemic and compare the performance of different types of value chains within a single country (Senegal) and the same commodity group (horticultural products) (Van Hoyweghen et al., 2021). Our results show that impacts were not evenly felt across value chain types, and that modern, export-oriented vertically integrated chains have been much more resilient than their more traditional counterparts that supply domestic markets. Key differences relate to VC structure, level of vertical coordination, the size of operations, and the ability of VC actors in both chains to overcome marketing, input, and labor constraints.

### Background

#### FFV supply chains in Senegal

Specific pandemic-related supply chain disruptions depend on the structure and organization of the supply chain in question. Therefore, it is useful to distinguish between two co-existing fruit and vegetables (FFV) supply chains in Senegal:

- 1) A modern, vertically-coordinated, high capital- and labor-intensive supply chain organized around a few large capital-intensive agro-industrial companies that produce, process, and distribute produce. These FFV companies mainly focus on supplying export markets, and recently also the domestic market (e.g. supplying local supermarkets).
- 2) A more traditional supply chain focused on supplying the domestic market, with a high labor-intensity but a lower capital-intensity. This chain is dominated by smallholder farmers and small to medium traders and wholesalers, who transport produce from rural production zones to urban wet markets through a web of small to medium-scale traders.

## Pandemic containment measures

In response to the COVID-19 pandemic, Senegal declared a state of emergency on March 23, 2020, followed by a range of policy measures to prevent the spread of the coronavirus: transport was significantly restricted, wet markets were closed, and shops were required to limit their hours. These moves disrupted food supply chains, in particular those of highly perishable products such as FFV.

## Methods & data

To understand the implications of COVID-19 containment measures on FFV supply chains in Senegal, we interviewed all relevant actors, including 50 farm and agro-industry workers, 102 smallholder farmers, 80 traders, 10 agro-industrial companies, 20 importers, and 172 consumers—but without arriving at representative samples for all categories. Data were collected between April and June 2020, using phone interviews and self-administered online questionnaires. This primary data was complemented with secondary data on international FFV trade flows. We rely on recall data to compare the situation before and after the start of the state of emergency on March 23, but cannot completely disentangle COVID-19-related impacts from seasonal variation.

## Impact on the supply side

On the supply side of Senegal's FFV chains, we find changes in the allocation and productivity of land, labor, and capital inputs in the months after the start of the pandemic and the declaration of the state of emergency.

First, among export-oriented FFV companies, larger companies indicated they did not change their production area, while smaller companies indicated they reduced FFV production area by 50%-75% because of the crisis. Among interviewed smallholders, 25% said they left land completely fallow during the hot dry season, for which preparation more or less coincides with the start of the COVID-19 crisis, while only 15% said they started a new production cycle of FFV in this season, and mostly on a smaller share of land than under normal circumstances. For the next season, the main rainy season that began at the end of the interview period, only 40% of the interviewed farmers indicated an intention to allocate land to FFV, while various farmers intended to switch to groundnuts or staple crops instead of FFV.

Second, smaller agro-industrial companies and smallholder farmers faced important restrictions in hiring workers, because of mobility restrictions and workers' fear of becoming infected. By contrast, larger agro-industrial companies reported no problems with the supply of labor. These companies invested in protective and sanitary measures, including setting conditions for social distancing

between workers in the field and in processing units, and in a larger or more frequent commuter bus service capacity for their workers—a service that many large companies offer to attract workers. Nevertheless, because of reduced activities, the demand for labor in these companies fell by 20%-90%. Only 66% of the sampled agro-industry workers were employed both before and after the declaration of the state of emergency, and 45% of them reported working less frequently afterward. We find no changes in wages and contracts of workers.

Third, access to agricultural inputs was a major constraint for smallholder farmers and smaller agro-industrial companies because of mobility restrictions, closed shops, lower availability of vendors, increased input prices, and lack of cash. The largest agro-industrial companies did not experience input-related problems: They had enough input stocks, direct buying relations with international input dealers, and could switch between input suppliers in case of delivery problems.

In short, the variance in impacts on the supply of FFV depends on the size of producers and the type of supply chain they operate in. Our data reveals that better vertical coordination contributes to more resilient supply chains and that the export-oriented supply chain adapts more easily to the COVID-19 situation through innovations.

## Impact on trade and consumption

In addition to supply-side impacts, we also observed disruptions in other stages of the FFV chains, including

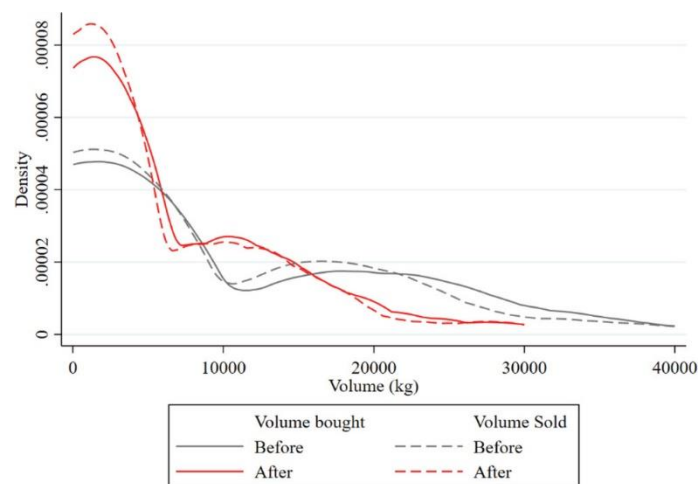


Figure 1. Purchase and sales volumes (kg) of local traders during the two weeks before and two weeks after the declaration of the state of emergency.

drops in domestic and international demand and substantial changes in how FFV were bought and sold. Also in these stages of the FFV chains, we observe a resilient vertically integrated modern export chain, while the domestic chain was much more impacted, with a wide network of heavily affected traders, intermediaries, and retailers.

## Box 1: Fresh produce e-commerce in Senegal

To adapt to the new reality, urban consumers, local traders, and to a limited extent also smallholder farmers, increasingly use online shops and platforms to buy and sell food products, including FFV. These platforms reduce the need of traders to travel the country, and limit the number of face-to-face encounters as they are able to link up with potential suppliers and buyers, and agree on quantities and prices, online. The move toward online buying and selling of FFV -although the market is still assumed small- is part of a larger trend of increasing e-commerce in Senegal, which already started before the crisis, but has accelerated since thanks to the installment of a proper legal framework and relatively high smartphone penetration and internet use among the urban population. The FFV e-commerce market presents itself in many forms and consists of informal advertising by small-scale traders and smallholders via different social media channels (e.g. Facebook and WhatsApp groups), specific trading fora (MLouma, AfrikaMart), well-built webshops by local small- and medium-sized enterprises (e.g. Club Tioassane, Niokobok, Yonutol, Park Nadio), and more established international e-commerce platforms (e.g., Jumia or Auchan's webshop). The trend towards increased e-commerce, and e-procurement across all stages of the food value chain has been observed globally, including other SSA countries (Reardon et al. 2021). However, The extent to which these operational innovations will endure post-COVID remains an open question.

## Conclusions

While case-specific for Senegal, the pandemic's differential impacts on large vs. small producers and the different value chain actors (e.g. small traders, or exporters) demonstrate the complexity of supply and demand-side effects due to an adverse shock such as COVID-19. Our early findings point to a severe impact on the availability and accessibility of nutritious foods, food insecurity, and hunger in the aftermath of the COVID-19 pandemic in Senegal. Mitigating this food security impact requires support to domestic food production— for example, through the installment of green passage lanes for food products during mobility restrictions— and attention to smallholder farmers in COVID-19 related financial aid

programs in developing countries (Laborde et al., 2021). Furthermore, policy attention is needed to increase vertical coordination in domestic value chains and foster innovation.

Our study on the early consequences of the Covid-19 pandemic on food supply chains in developing countries is constrained by the limited quantity and quality of data from phone and online surveys. Our study entails further limitations with respect to the difficulty in disentangling inherent seasonal variation and Covid-19 implications, and potential recall bias in the data. Nevertheless, this study brings some important nuances in the debate on the resilience of the food system to the pandemic.

## Further readings

- Van Hoyweghen, K., Fabry, A. Feyaerts, H. Wade, I. & M. Maertens. (2021). Resilience of global and local value chains to the Covid-19 pandemic: Survey evidence from vegetable value chains in Senegal. *Agricultural Economics*, 52(3): 423-440.
- Laborde, D., Martin, W., & Vos, R. (2021). Impacts of COVID-19 on global poverty, food security, and diets. *Agricultural Economics*, 52(3): 375-390.
- Reardon, T., Heiman, A., Lu, L., Nuthalapati, C.S.R., Vos, R., & Zilberman, D. (2021). "Pivoting" by food industry firms to cope with COVID-19 in developing regions: e-commerce and "co-pivoting" delivery-intermediaries. *Agricultural Economics*. 52(3): 459-475.

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