

# The COVID-19 impact on Ugandan supply chains

## The importance of imports



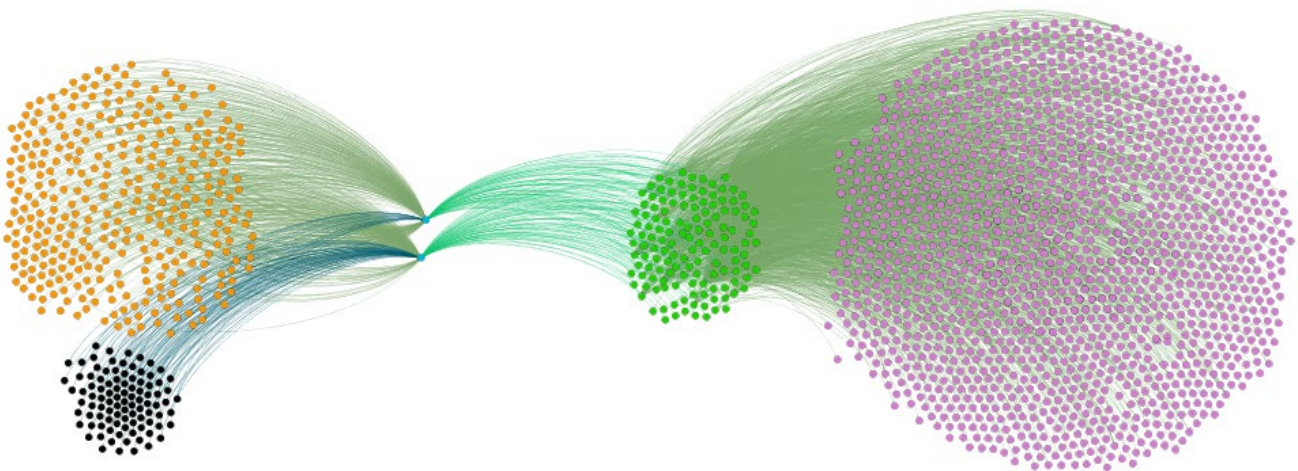
- In brief:**
- Ugandan firms do not operate in isolation: Supply chains depend on the quick supply of goods and services as inputs for productive activities. Crucially, Uganda sources these inputs both domestically as well as from foreign firms.
  - This study first investigates the impact of COVID-19 at the outset of the pandemic on Uganda's trade. Starting from the documented reduction of imports the study then investigates the impact of this supply-side shock on the Ugandan firm network using firm-to-firm transaction data.
  - The findings demonstrate the importance of imported inputs for the smooth operation of the Ugandan economy.
  - Further, a simulation of continued disruptions of imports to the degree found in the actual data suggests that such low levels of imports would lead to the closure of 6.6% of formal firms and a 4.7% reduction in formal employment.

*This project was  
funded by IGC  
Uganda*

## Ugandan production networks - The role of imports

Firms do not operate in isolation: They act as both sellers and buyers of goods and services in often complex, interdependent, and increasingly internationalised production networks. Figure 1 is constructed from original Ugandan firm-to-firm transaction data using the technology developed in [Carvalho, Elliott and Spray \(in progress\)](#), and supports this statement by reference to a real supply chain in Uganda. Each firm is represented by a node and each connection indicates that a trade has taken place between two firms. As shown in the figure, goods flow from domestic raw material producers (orange) to two manufacturers (blue), to the distributors (green) and finally the retailers (purple). Black nodes represent foreign suppliers of inputs. As evident from this illustration, the value chain is interdependent: A disruption at any stage of the chain could result in firms going out of business and jobs being lost. The illustration also shows that the two factories depend on imports from a number of foreign suppliers (black dots).

Figure 1: An example of a Ugandan supply chain.



**Notes:** 2 factories (blue) buy inputs from 340 suppliers (orange) sell to 135 firms (green) sell to 1548 firms (purple) and import from 96 foreign suppliers (black). Taken from [Carvalho, Elliott and Spray \(in progress\)](#) and constructed from Ugandan value added tax (VAT) declarations.

In this research project we explore the role of imports for Uganda's firms against the background of severe disruptions in global trade due to COVID-19. Specifically, our analysis centres on three issues:

1. What was the impact of COVID-19 on Uganda's trade at the outset of the pandemic?
2. How do reductions in the volume of imported inputs affect Ugandan firms?
3. Which Ugandan firms are "essential" to the domestic firm network due to supplying goods and services without which other firms cannot operate?

To address these questions, we employ three firm level tax-admin datasets collected by the *Uganda Revenue Authority* and proceed as follows. First, we use transaction-level customs data showing imports and exports of every Ugandan firm between March 2015 - 2020. We use these data to illustrate how COVID-19 related disruptions in global trade and production affected Uganda's exports and imports in March 2020. Building on the results from this exercise we simulate how continued import disruptions to a similar degree would affect domestic firm activity and employment, utilising data from Value-Added Tax (VAT) receipts as well as Pay-As-You-Earn (PAYE) declarations. In Uganda, VAT-registered firms submit a monthly value-added tax return form which captures all of their transactions over the previous month. These data provide details on the transaction value and the tax identifier of the firm on the other side of the

transaction (a buyer or a seller of goods or services). This feature allows us to observe the production network for Uganda’s tax paying firms. The PAYE data provides us with the number of employees per firm. In a last exercise, we use the firm-to-firm transaction data to identify companies in Uganda’s firms network that we call “essential”. Intuitively, these firms can be thought of as providers of crucial inputs to other firms without which these could simply not operate (e.g. transport services). The following summarises the three main findings of the research project. This builds on a methodology developed in [Carvalho, Elliott and Spray \(in progress\)](#).

## Finding 1: COVID-19 severely affected the availability of imported inputs in Uganda.

To investigate how the global slowdown in trade and production due to COVID-19 affected Ugandan trade, we employ transaction-level custom data collected by the *Uganda Revenue Authority*. We then provide an approximation for the impact of the crisis on Uganda’s trade by comparing import and export values for the month of March (the latest month for which these data are available) from 2015 – 2020. We find that compared to March 2019, Ugandan exports were reduced by a staggering 57% in March 2020, while imports fell 18% year-on-year.<sup>1</sup>

Regarding imports specifically, we demonstrate that most of this reduction was due to lower imports from China, coinciding with the closure of Chinese factories at the outset of the pandemic. Combining the data with a standard classification of internationally traded goods, we find that almost all of the overall reduction of imports was driven by lower imports of capital goods (e.g. turbines, transformers or other machines) and intermediate goods (e.g. palm olein or spare parts) – crucial inputs for production processes. Imports of consumption goods were barely affected (cf. Figure 2).

**Figure 2: Import reductions due to COVID-19 were driven solely by intermediate and capital goods.**



**Notes:** The graphs show Uganda’s import values in March for each year for capital goods, intermediate goods and consumption goods. All values are in billion Uganda Shilling (constant 2010 values). Author’s illustration from URA customs data 2015 - 2020 and using the Broad Economic Categories (BEC) classification of goods.

<sup>1</sup> It should be noted that simply comparing values from March 2020 with the same month in previous years is not a precise estimate for the causal impact of COVID-19 on Uganda’s imports and exports: Factors unrelated to the crisis (e.g. economic growth since March 2019 or the trade policy of trading partners) will also influence the March 2020 figures we report here.

## Finding 2: Continued import interruptions would lead to the closure of a large number of formal firms and result in significant employment losses

Building on our first finding, we then explore the effect of continued import reductions of a similar magnitude on Ugandan firms. In the simulation that most closely mirrors the observed reductions in March 2020, we find that continued disruptions of this size and nature would lead to the closure of 6.6% of all formal firms and a reduction of formal employment by 4.7%.

Our analysis also suggests that three types of firms would be hit disproportionately. First, manufacturing firms especially in footwear and cement. These firms require substantial inputs into their production which are not available locally, making production without imports impossible. Second, agricultural firms including growing of tea and coffee are damaged by the import reduction as well. This sector relies on inputs such as fertiliser or packaging from abroad. This finding is especially concerning given the importance of the sector to Uganda's export performance. Finally, and most concerning against the background of the pandemic, the medical sector is also hit.

## Finding 3: Some firms are “essential” for the functioning of Uganda’s firms network and potentially provide a powerful lever for policy interventions

Some firms in a network of firms are more important than others. For instance, if in the network presented in Figure 1 one of the retailers (purple) would shut down, the remaining ones would likely have enough capacity to take up excess supply and handle the distribution. However, the two factories (blue) are “essential”: With one or both shutting down, supply of the product the chain produces and distributes would vanish and destroy the connections. Identifying “essential” firms in supply chains can therefore provide the government with a powerful lever to combat the economic ramifications of the pandemic through targeted interventions.

Employing a method detailed in [Carvalho, Elliott and Spray \(in progress\)](#) we identify these types of firms in the data that resemble the economy both before and after COVID-19 related import reductions.<sup>2</sup> The identified firms include companies active in the cargo handling sector, telecommunications, health services and manufacturers of building materials and food products. Detailed results are available in the paper accompanying this note.

## Policy recommendations

Demonstrating that imports matter for the functioning of the Ugandan firm network, our research yields four policy recommendations targeted at minimising the effects of COVID-19 related interruptions, costs and delays in the movement of international cargo shipped to Uganda.

- **Strengthen electronic infrastructure that both minimises human contact and has proven to significantly reduce the time and cost of importing and exporting.** For Uganda, this could mean the rapid roll out and aggressive promotion of the *Uganda Electronic Single Window*, a platform allowing traders to submit documents required for trading to all approving agencies electronically through a single access point.
- **Significantly extend the operating hours of key border posts and increase testing facilities at these borders thereby allowing for the timely but safe clearance of**

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<sup>2</sup> The Spanish government has also been interested in this type of strategy to identify weak points in supply-chains documented in RESILIENCIA COLECTIVA Y AUTONOMÍA ESTRATÉGICA EUROPEA POS-COVID-19 (2020).

**trucks.** For Uganda, the most crucial borders for international cargo are the borders of Busia and Malaba providing access to the port of Mombasa in Kenya.

- **Negotiate with the Kenya Ports Authority to extend the grace period for free clearance of Uganda destined cargo from 14 to 21 days or longer.** Ugandan importers are charged sizeable fees when overstaying the usual grace period despite not being able to clear their containers due to ongoing disruptions and delays.<sup>3</sup>
- A different set of measures could be targeted at supporting individual firms that are both essential to the Ugandan firm network and disproportionately hit by imports disruptions. While such support plans would have to be designed in line with the individual company under generally support could take forms like government-backed loans for short-term working capital, fast-tracking of outstanding VAT rebates, or deferrals or reductions of tax payments.

## References

Carvalho, Vasco M., Matthew L. Elliott, and John Spray (in progress), "[Supply Chain Bottlenecks in a Pandemic](#)," *Mimeo*, 2020.

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<sup>3</sup> Notably, the Uganda Revenue Authority already successfully negotiated an extension of the grace period for free clearance with the Kenyan authorities from 9 to 14 days, however a significant increase in the number of days would benefit the private sector by removing uncertainty given multiple delays.