

Noel Watson
Paul Clyde
Alassane Fall

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Anticipating Changes to African Supply Chains as a Result of COVID-19: The Case of Senegal

Amadou Sene, director of the Supply Chain Management Center of Excellence at the African Institute of Management (IAM), had recently started a supply chain advising group in Senegal. Formal training and practicing of supply chain practices weren't common in Senegal and Amadou's long-term goal was to change that. He had already worked with external academics to develop a Masters program in Supply Chain Management at IAM and his next step was for the center to start providing consulting services. Then COVID-19 hit. Two months into the pandemic, he had to address two questions for his clients: 1) how do we deal with the immediate implications of COVID-19, and 2) after COVID-19 is no longer a concern itself, how will the experience change the supply chains and, specifically, how will that affect firms in Senegal?

Coronavirus disease 2019 or COVID-19, as it became known, was caused by severe acute respiratory syndrome coronavirus 2 (designated SARS-Cov-2) about which much is still unknown. Common symptoms initially included fever, cough and shortness of breath but evidence soon suggested that other seemingly unrelated symptoms were also associated with the disease.¹ The first reported cases from Wuhan, China, were almost five months earlier, at the beginning of 2020. By the end of January the virus had spread to all mainland provinces in China and 25 additional countries on four continents (Asia, Europe, North America and Oceania), including South Korea, Thailand, USA, Italy, Japan and Australia. At this point, most countries had implemented a ban or at least a request for self-isolation on travelers from China.

By the end of February, the virus had spread to 53 countries including two in Africa. Of the 85,403 cases confirmed globally at that time, 79,394 were from China, however new cases outside of China had surpassed those within. Particularly alarming were the number of cases in countries like Italy, Iran and South Korea. China imposed a complete lockdown on the Hubei province to stem the spread of the disease within and outside of the province. Italy also imposed a similar lockdown on parts of its northern region in response to the spike in cases there.

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By end of March 2020, the virus had spread to 202 countries and territories including 39 in Africa with 750,890 confirmed global cases and 36,405 deaths. Many countries had imposed national lockdowns to arrest the rise in cases of the disease. Some countries were, however, on a reverse course. By the end of March, China had removed its quarantine on the Hubei province and businesses in the province had begun to reopen. In countries like China, South Korea, Vietnam and Thailand, the greater risk for infection was from travelers from outside the country rather than local transmissions.

By the end of April 2020, the extent of the spread was impressive at more than five million confirmed cases globally. However, given the logistical difficulties of large-scale testing and the fact that many of the infected showed no symptoms, the true number of infections may have been understated by a factor of two or more. Combined with a mortality rate that was considerably higher than the typical flu, COVID-19 caused a third of the global population to be in some sort of lockdown (restrictions on citizen movement).²

Uncertainty continued to pose challenges to policy makers and scientists alike. There was uncertainty about the extent of infection, the way people became infected, the likelihood and timing of an effective vaccine,ⁱ and a host of other relevant issues. However, some things were becoming clearer, including the significantly higher levels of mortality among the elderly population and those with other health problems. As a result, some were calling for more targeted policy approaches as alternatives to the blunt approaches of mass lockdowns that had characterized much of the global response to date.³ Nonetheless, by May there was still much unknown and businesses all over the world had to make decisions, even if they didn't know what they, their customers or their suppliers would be allowed to do next month, in six months or even in a year.

By May, Africa itself seemed to be relatively spared by COVID-19 infections from a caseload perspective. But this may have been illusory since testing wasn't prevalent, and the disease could also change at any moment. However, there were also reasons to believe that Africa may be as affected as other parts of the world. The demographics, for instance, were in its favor. About 3% of sub-Saharan Africa's population was over 65 years old, compared to around 20% for OECD countries.ⁱⁱ However, the economic consequences would, without question, have a profound negative impact on the economies. GDP growth rates in Africa, initially projected to be over 3%, were expected to drop to 1%, or even be negative for 2020.⁴

The Effect on Markets and Supply Chains

The impact of COVID-19 on supply chains globally was multifaceted and driven by the actions and inactions of individuals, companies, countries and regions.

Since China played an integral role in the global economy with respect to both demand and supply, the emergence of COVID-19 within China created a significant disruption on global supply chains. In retail for example, 20% of U.S. retailer's supply chains were exposed to China and the percentage of a retailer's goods that were sourced from China could range up to 70%, depending on the retailer.⁵ China also played a role in the supply chains of automotive, electronics and other capital goods. The Hubei province in China, where COVID was first identified and thus the first location to be shut down, was particularly important to the electronics sector and thus led to early disruptions in this sector.⁶ The Caixin Manufacturing Index, a leading indicator of economic activity in China that normally hovered around 50, dropped to an all-time low of 40.5 in March. Its previous low was 47 back in 2015.⁷ Total imports in the U.S. fell by 7.5% over the previous February; from China, the decrease was 21%.

ⁱ The novelty of the virus, and the fact that the only other strain of the coronavirus known to make the jump from animals to humans was in 2002-04 (SARS-Cov-1, commonly known as SARS), was part of the reason there was no treatment or vaccine available.

ⁱⁱ Countries participating in the Organization for Economic Cooperation and Development. For more information visit <https://www.oecd.org/about/members-and-partners/>.

China's imports also declined as a result of the slowdown and, even after some recovery, were not expected to reach prepandemic levels. Commodities like soybeans, iron ore and steel, and other raw materials experienced output declines from producer countries in South America and Africa, despite some existing reduction in production which had started in the previous year.⁸

As COVID-19 spread from China to other countries, the ensuing shutdowns in economies, reduction in workforce capacity for essential supply chain activities (e.g., logistics), and restrictions on travel continued to expand disruptions to global supply chains. For example, the American Association of Port Authorities estimated a 20% decrease in shipping in the first quarter compared to last year.⁹ Processing times and costs were affected by lack of trained personnel at ports, lack of empty containers at ports, less air freight cargo space (due to fewer passenger flights which also carried cargo), potential quarantine of ships and a host of other COVID-19 related changes.¹⁰ Italian ships, for example, which were responsible for 70% of Italy's trade, were turned away or quarantined at ports and hindered by workers responsible for inspections, packing, unloading of containers and documentation, because they were staying at home.¹¹

The effect of COVID-19 on demand, and thus supply chains, was highly variable; some products had endured a dramatic and sudden decrease while others, especially health-related commodities, experienced a sudden increase. Demand for N95 masks (half of which are produced in Asia), testing swabs (Italy is a major supplier) and ventilators increased dramatically.¹² The inability to secure a reliable supply led to shifting local manufacturing capacity in unrelated industries to health care.¹³ Conversely, the floral industry experienced reduced demand. Kenya exported tons of flowers to countries all over the world. March was usually peak season because of Mother's Day celebrations in the United Kingdom and Ireland, but in 2020 flowers were discarded and thousands lost jobs in this industry because of COVID. "The market situation is dramatic," said Steven van Schilfgaarde, director of Royal FloraHolland.¹⁴ Rubana Huq, president of the Bangladesh Garment Manufacturers and Exporters Association (BGMEA), had a similar assessment of the textile industry in Bangladesh: "Our situation is apocalyptic...The cancellations and hold instructions coming in from Western fashion retailers are pushing us to the point of insolvency, with massive open capacity and raw materials liabilities."¹⁵

In other cases, demand did not change, but consumer hoarding led to short-term variation. Toilet paper, for some reason, vanished from store shelves during the first couple of months of the pandemic. The product's low margin, large shelf space required, along with manufacturer's knowledge that there hadn't really been any change in demand, resulted in no changes to existing production plans. But, it was possible that the observed shift in demand was real. The inability to anticipate downstream demand can lead to unnecessary costs, excess inventory upstream, and shortages for end-customers, a phenomenon known as the Bullwhip Effect.¹⁶

The impact of COVID-19 on supply chains was not all negative or disrupting. Supply chains all depend on a reliable and skilled labor force. As COVID-19 disruptions improved the general public's appreciation for supply chains and their management, it also improved the appreciation for the labor force within the supply chains. "There is a new appreciation for retail store employees, factory workers and workers in logistics and transportation, energy, health care, education, and other industries responsible for sustaining life during shutdowns," said Sergio Chayet, director of the master's program in supply chain management at Washington University in St. Louis.¹⁷

Government Reactions

Companies had already started adjustments in supply chains from China due to the tariff wars between the U.S. and Chinese governments. Google, Microsoft, Hon Hai and Lenovo had all started moving away from China as a result of tariffs.¹⁸ It was unclear how governments were likely to react to COVID-19 in the longer run and the resulting change in corporate activity. However, the movement toward Lego's in-market, for-market approach may gain more traction in anticipation of more government interventions.¹⁹

The Effect on Africa

As mentioned earlier, the effect of the disease itself had been relatively limited in Africa, despite the difficulty of social distancing in overcrowded urban areas and the realistic lack of choice for those who relied on interpersonal transactions for their livelihood.²⁰ In many countries, governments had difficulties convincing people about the existence of the pandemic. Senegal itself had about 2,400 confirmed cases of COVID-19 and 25 deaths by mid-May, 2020.²¹ Because the effect of the disease itself could increase significantly in Senegal and throughout Africa, the repercussions of any government or corporate responses to the pandemic had to be considered by any responses of the supply chains in these countries.

For example, concerns about a potential shortage of hospitals and clinic centers caused the Senegal government to use other facilities, including hotels, to house individuals who tested positive. Three Senegalese hospitals were used to treat those who developed symptoms, but most patients were sent to Dakar where the necessary equipment was available. The government shut down transportation between regions to contain the virus and distributed food—such as rice, sugar and oil—to avoid social unrest as a result of the containment efforts. It was particularly vulnerable to the medical challenges posed by COVID-19. Senegal was completely dependent on other countries for medical supplies. Most of the medical equipment and supplies for Senegal had been coming from Morocco. As a result of the virus, many countries had stopped exporting, leaving countries that were reliant on imports vulnerable. Therefore, Senegal explored options with other trading partners but also encouraged local companies to begin producing by providing incentives. As with other products, the cost of transport and storage of medical products was increasing.

Despite the potentially limited impact of the disease, the ensuing impact of the pandemic on trading partners of African countries was expected to be significant. The 2008 global financial crisis provided some sense for what was ahead for Africa. In 2008, countries reliant on their oil and other natural resources saw their exports drastically reduced. Remittances stagnated in 2009 after having risen each year since 2003. Tourist numbers dropped from 35 to 33 million and took years to recover while development assistance effectively stagnated. In 2008, Angola went from 13.2% GDP growth to -0.6% in 2009, while Nigeria went from 6% to 3% in the same time frame. GDP growth in countries south of the Sahara decreased more than 50% from 2008 to just 2.5% in 2009. This level of growth was not sufficient, given high birth rates.²² And, the COVID-19 pandemic could become worse.

As a result of COVID-19, copper and oil traded at their lowest prices since 2016.²³ China's growth rate was forecast to fall to 4.5% from 6% which translated into less demand for Africa's raw materials and commodities.²⁴ And, due to China's economic restrictions, traders across Africa could struggle to import goods for domestic commerce.²⁵ Indeed, the UN's Economic Commission for Africa (ECA) estimated the continent's average GDP growth rate would fall by 2.5% for 2020, a decrease of about 6% compared to the previously estimated increase of 3.2%.²⁶ The World Bank estimated a 23.1% decline in remittance flows for sub-Saharan Africa for 2020.²⁷ Africa's recovery would depend on external financial support. In March 2020, the UN's Economic Commission for Africa estimated that Africa needed an immediate emergency economic

stimulus of \$100 billion, half of which could come from waiving interest payments for countries on the continent.²⁸

Senegal's economy was vulnerable to supply chain challenges, just like other countries in Africa.

The top 10 exports from Senegal in 2019 accounted for more than 75% of total exports and were typically natural resources.²⁹ They included:

1. Mineral fuels including oil: US\$831.1 million (19.9% of total exports)
2. Gems, precious metals: \$641.9 million (15.4%)
3. Fish: \$495.9 million (11.9%)
4. Inorganic chemicals: \$340.4 million (8.2%)
5. Ores, slag, ash: \$196.9 million (4.7%)
6. Oil seeds: \$195.3 million (4.7%)
7. Salt, sulphur, stone, cement: \$193.6 million (4.6%)
8. Miscellaneous food preparations: \$144.6 million (3.5%)
9. Iron, steel: \$102 million (2.4%)
10. Fruits, nuts: \$100.4 million (2.4%)

Remittances to Senegal were 10.17% of GDP in 2017.³⁰ Debt to GDP ratio was 64.5% in 2018 and the 2020 estimate for percentage of the population below the international poverty line (US\$1.9 PPP) was 31.2%.³¹

The question Amadou had to consider was which Senegalese supply chains would be affected by long-term or permanent changes as a result of COVID-19. How would they be affected, and what strategies could be adopted to put Senegalese industries in better position after the COVID-19 pandemic was over?

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