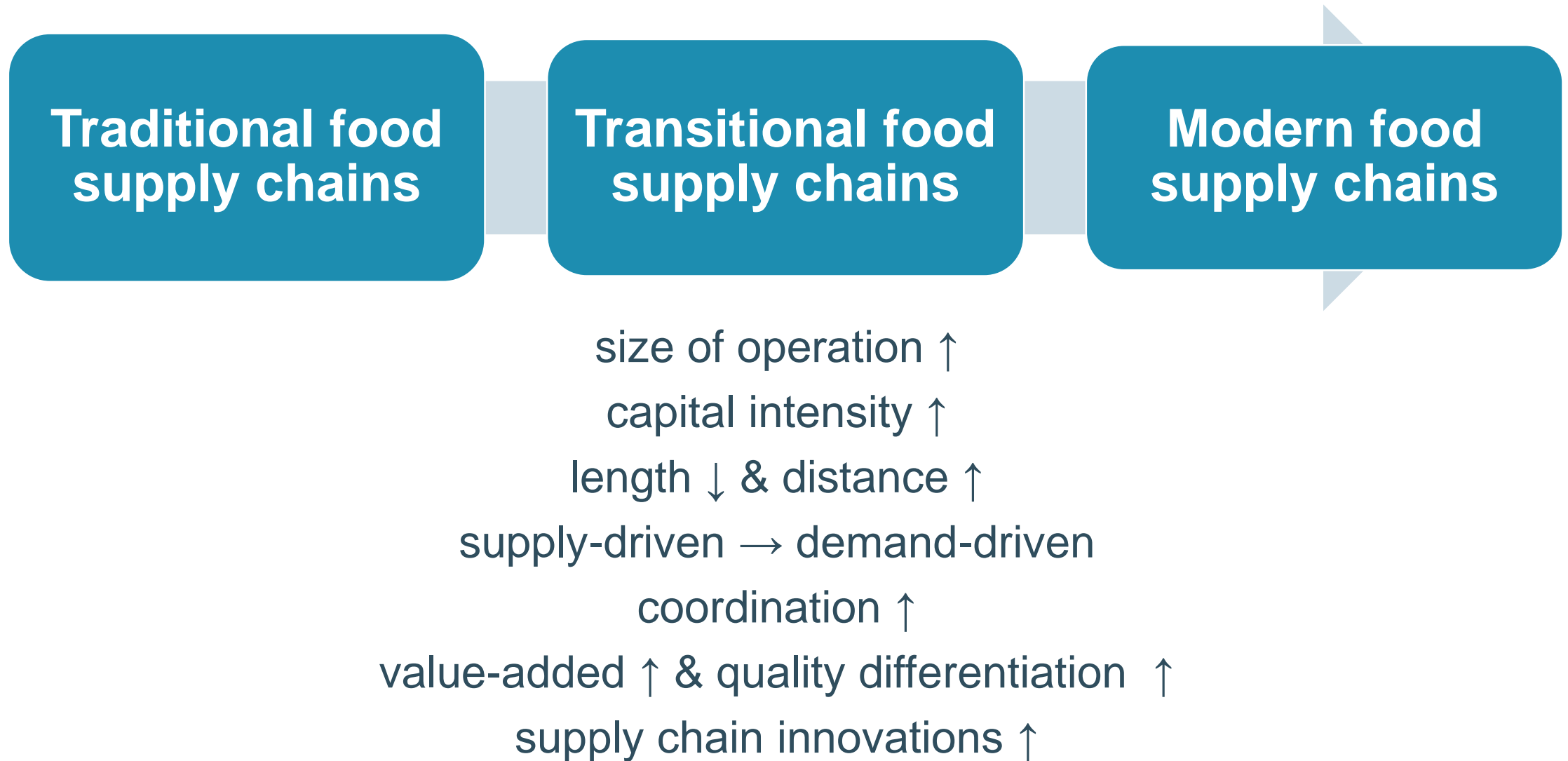


Global and local food value chains in Africa: Supply chain linkages and sustainability

MIET MAERTENS

10th Conference of the Italian Association of Agricultural and Applied
Economics, June 10-11 2021





Cereals & staples

- Low value, storable, annual crops
- Traditional to transitional supply chains
- Limited differentiation between local and global chains

Tropical commodities

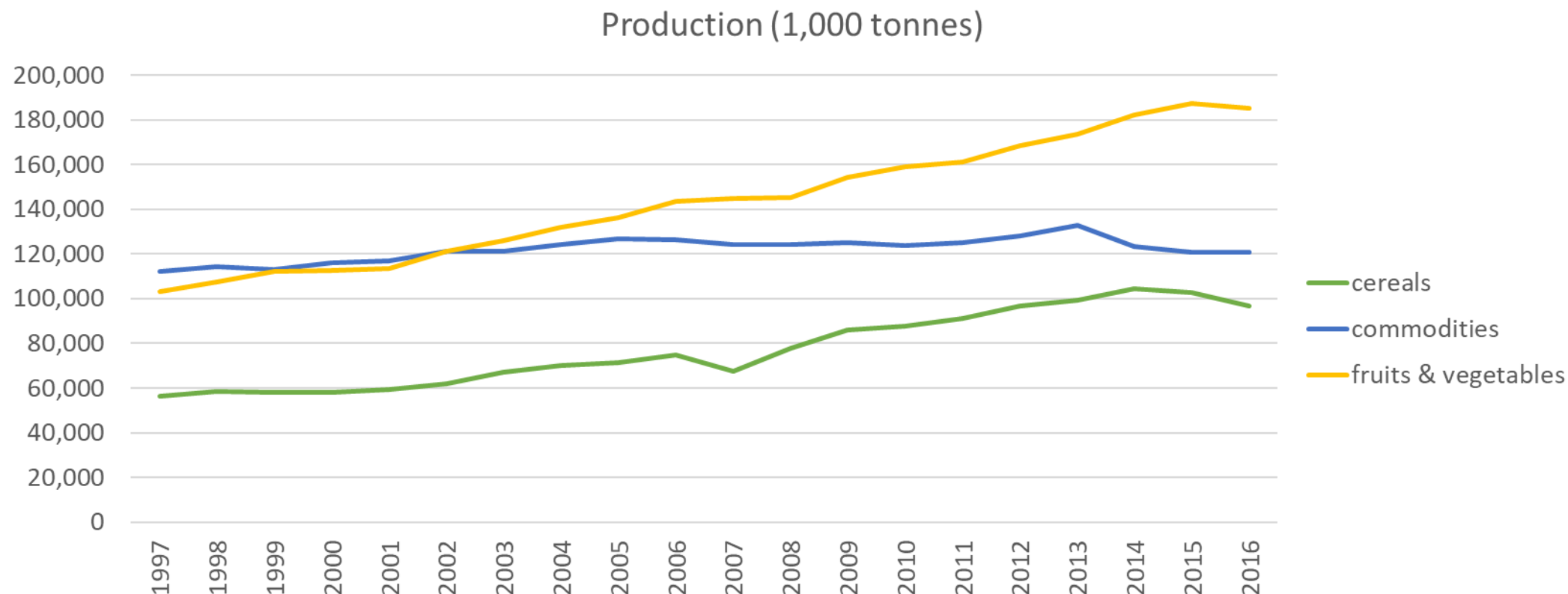
- Medium value, perennial (& annual) crops
- Transitional to modern supply chains
- Mainly export chains

Fresh fruits & vegetables

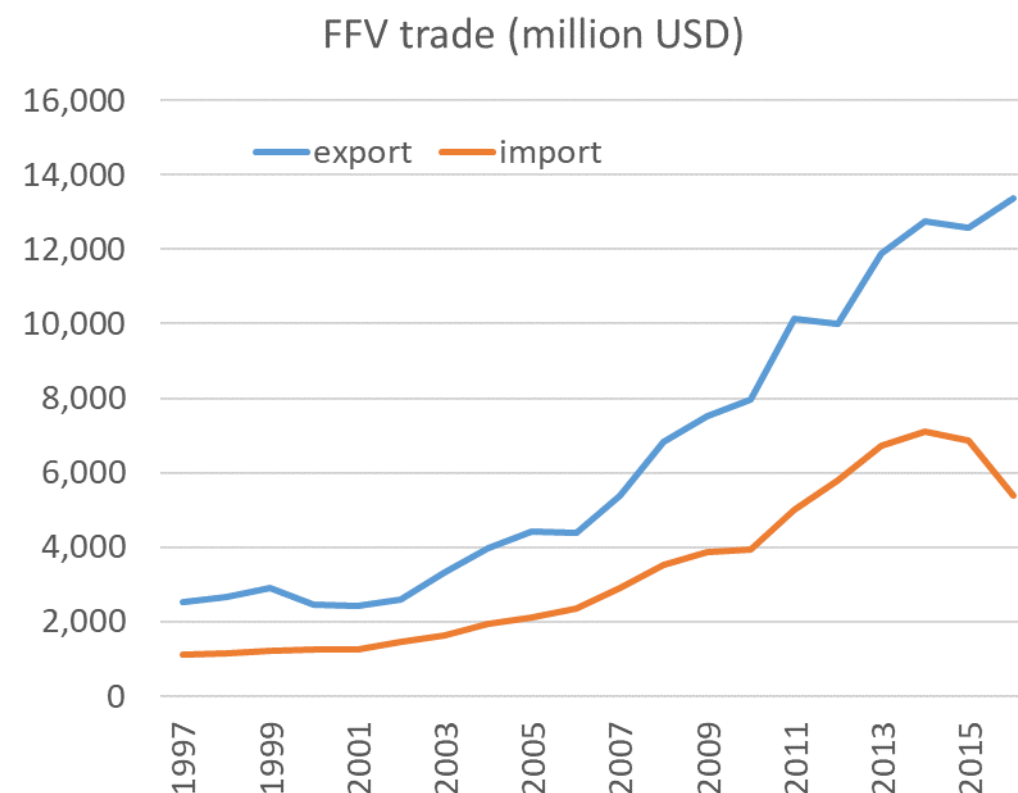
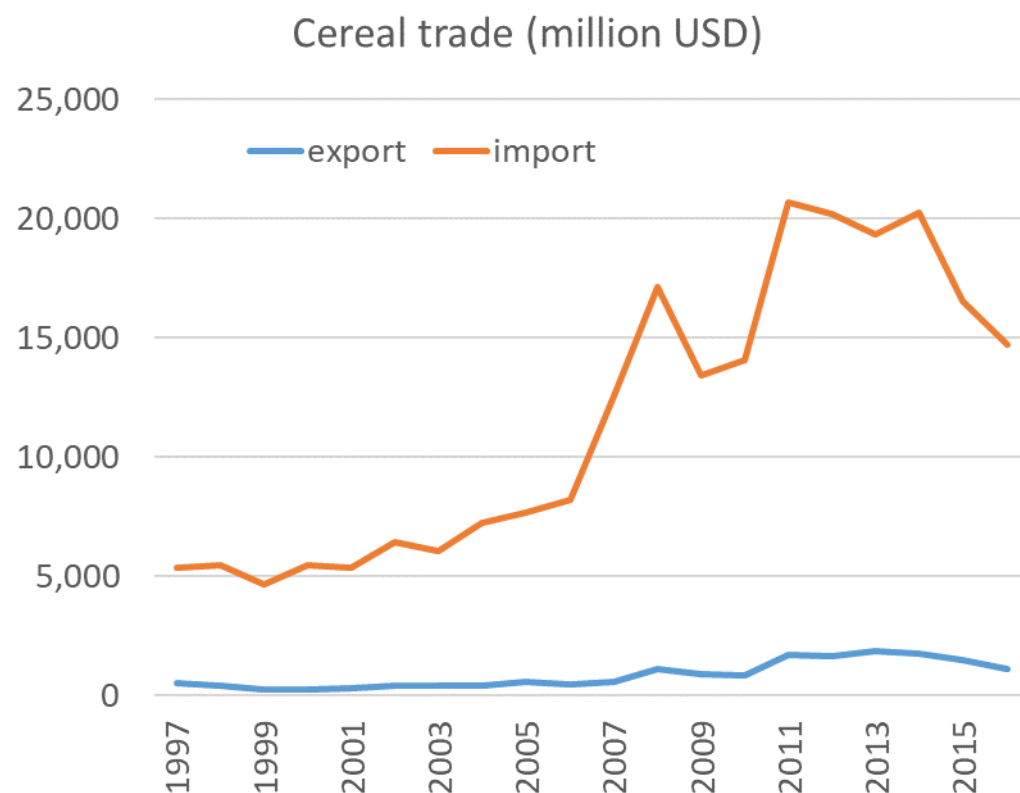
- High value, perishable, annual & perennial crops
- Strong differentiation between local traditional to transitional supply chains and global modern chains

Based on Poulton et al (2006); Swinnen et al. (2007)

Global & local food value chains in Africa



Global & local food value chains in Africa



Supply chain linkages

- Negative competition effects:
 - Land
 - Labor
 - Water, natural resources
- Positive spillover effects:
 - Investment and consumption spillovers
 - Technical and managerial spillovers
 - Infrastructure spillovers & agglomeration effects
 - Institutional spillovers

Feyaerts et al. in Agricultural Economics (2019)

Supply chain linkages

Cereals & staples

- Limited competition for land, labor & resources
- Limited positive spillover effects

Tropical commodities

- Strong competition for land, labor & resources
- Positive spillover effects possible

Fresh fruits & vegetables

- Limited competition for land & labor (& resources)
- Important positive spillover effects

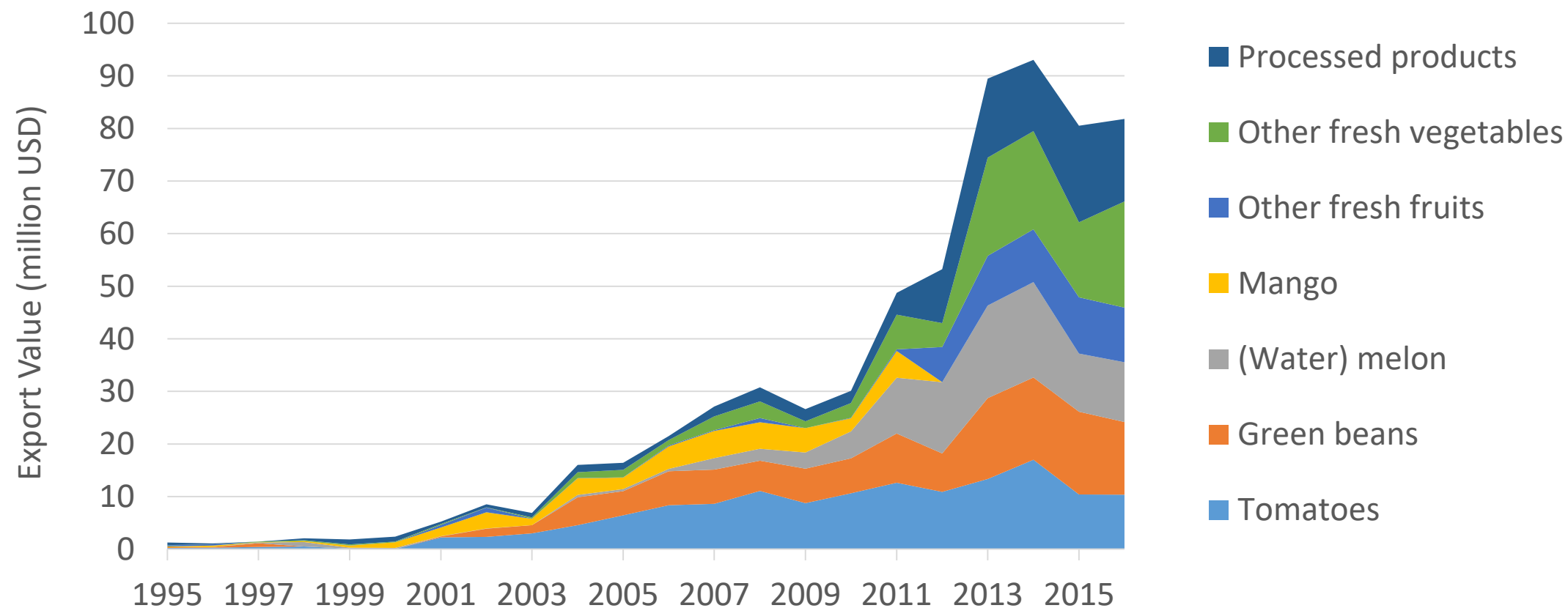
Feyaerts et al. in Agricultural Economics (2019)

Supply chain linkages – Senegal, horticultural sector

- Data collection
 - 15 years of survey data collection among farmers, workers, agro-industrial export companies, importers, ...
 - Focus on two main producing regions: Les Niayes & Senegal River Delta



Senegal, horticultural sector – exports



Senegal, horticultural sector – competition

- Limited **competition** for land & labor
 - Land-lease deals between export companies & rural communities
 - Production contracts between export companies & (larger, more capitalized) family farms
 - Employment of rural households in export companies



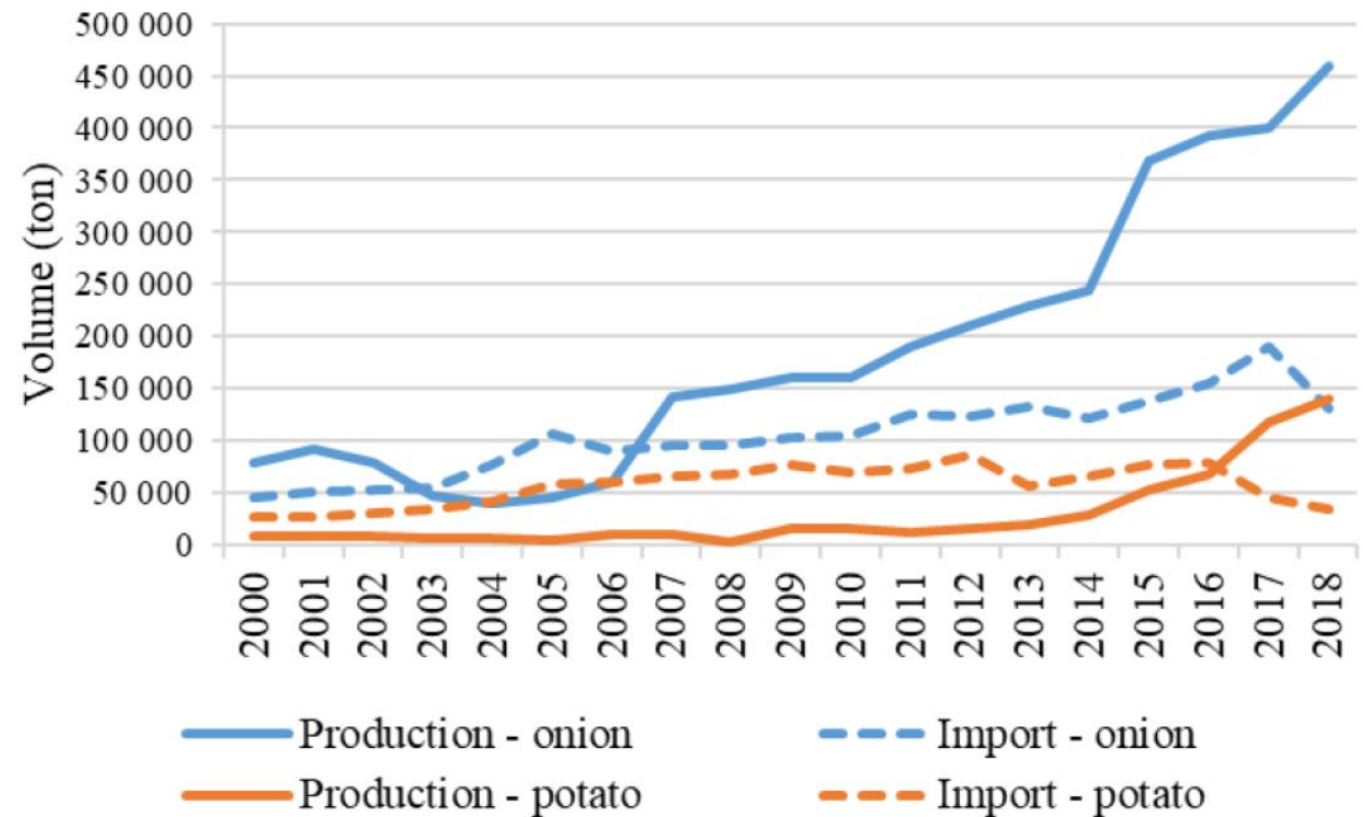
Senegal, horticultural sector – spillover effects

- Substantial positive **spillover** effects
 - Employment & wage income create investment spillovers
 - Employment & wage income create consumption spillovers
 - Technical & managerial spillover through contract-farming
 - Infrastructure & agglomeration effects through roads & irrigation



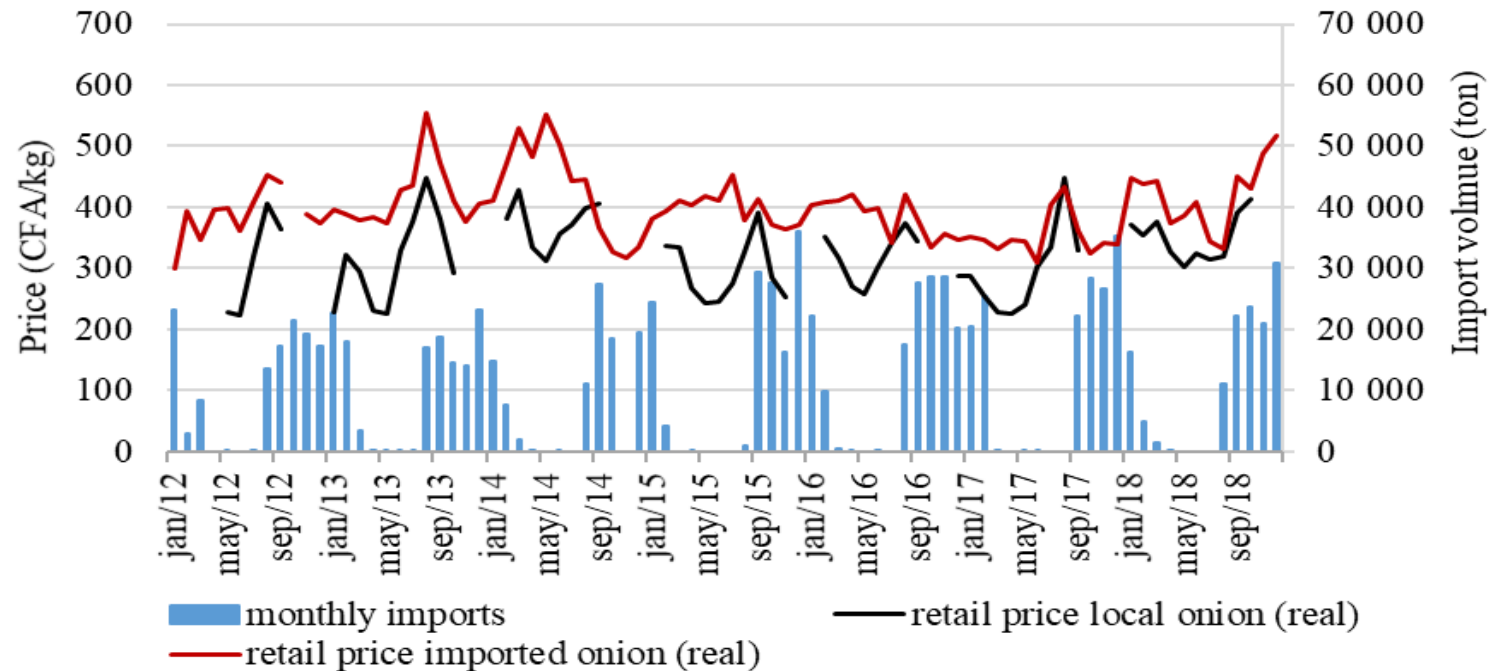
Senegal, horticultural sector – imports

- Import substitution
 - Consumer preferences for imported onion (potato, carrots, ..)
 - (Perceived) lower quality of locally produced onion



Senegal, horticultural sector – imports

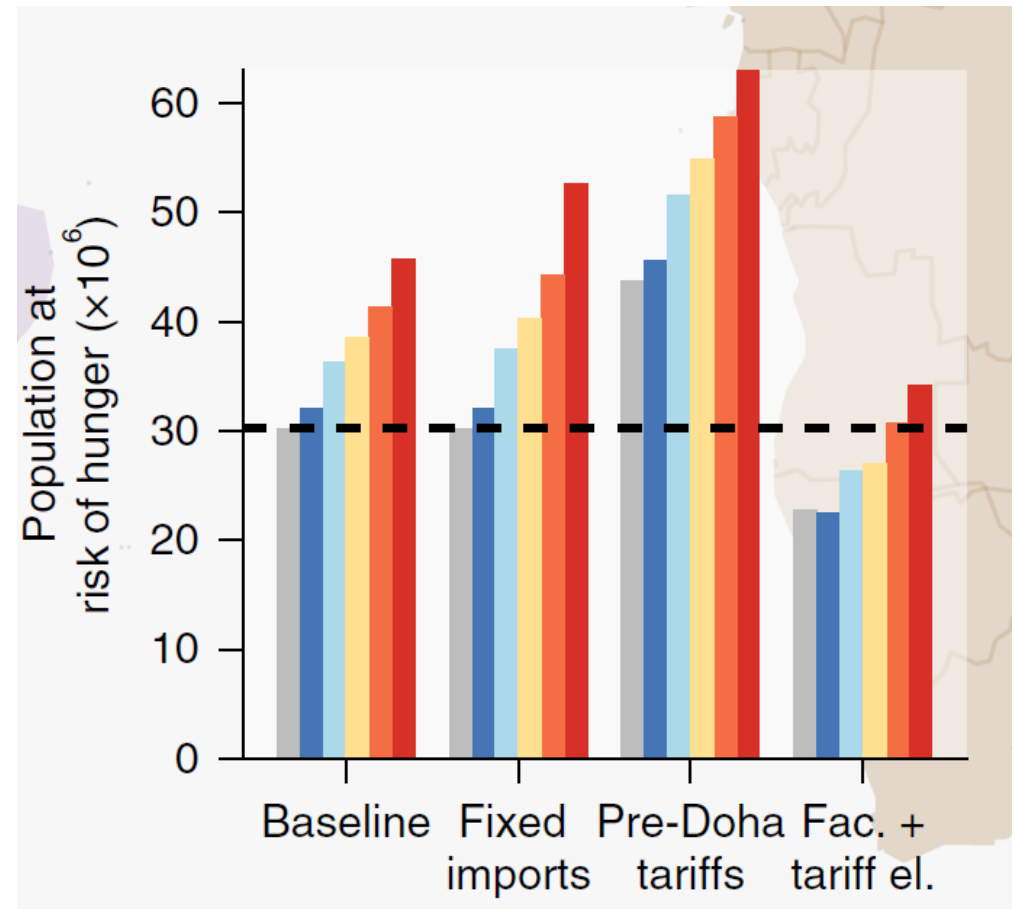
- Import substitution
 - Consumer preferences for imported onion (potato, carrots, ..)
 - (Perceived) lower quality of locally produced onion
 - Seasonal import bans



Sustainability in global supply chains

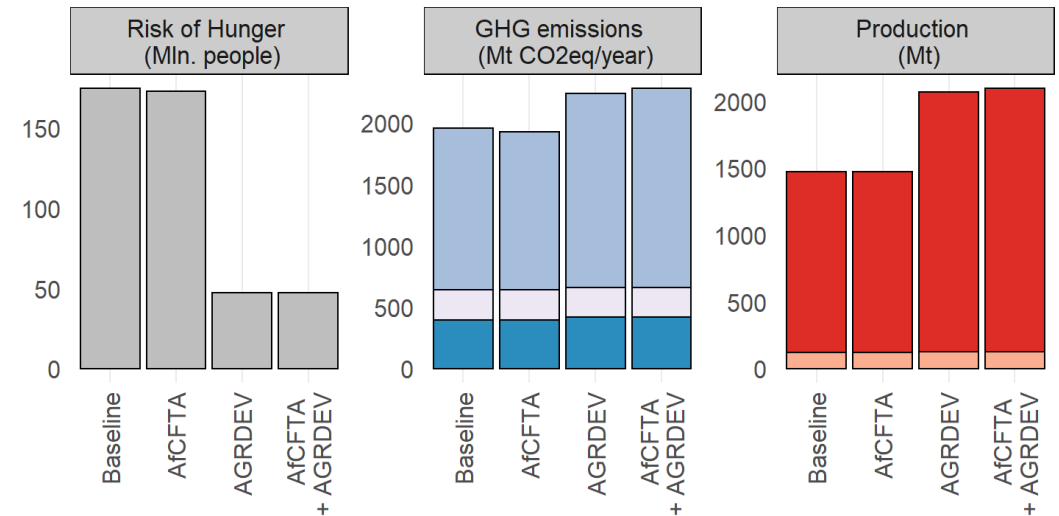
- Greenhouse gas emissions
 - GHG emissions from land use (change) much more important than from transport
 - International trade important to reduce the hunger impact from climate change

Janssens et al. in Nature Climate Change (2020)



Sustainability in global supply chains

- Greenhouse gas emissions
 - GHG emissions from land use (change) much more important than from transport
 - International trade important to reduce the hunger impact from climate change
 - Value chain development important to reduce hunger at lower GHG emission cost



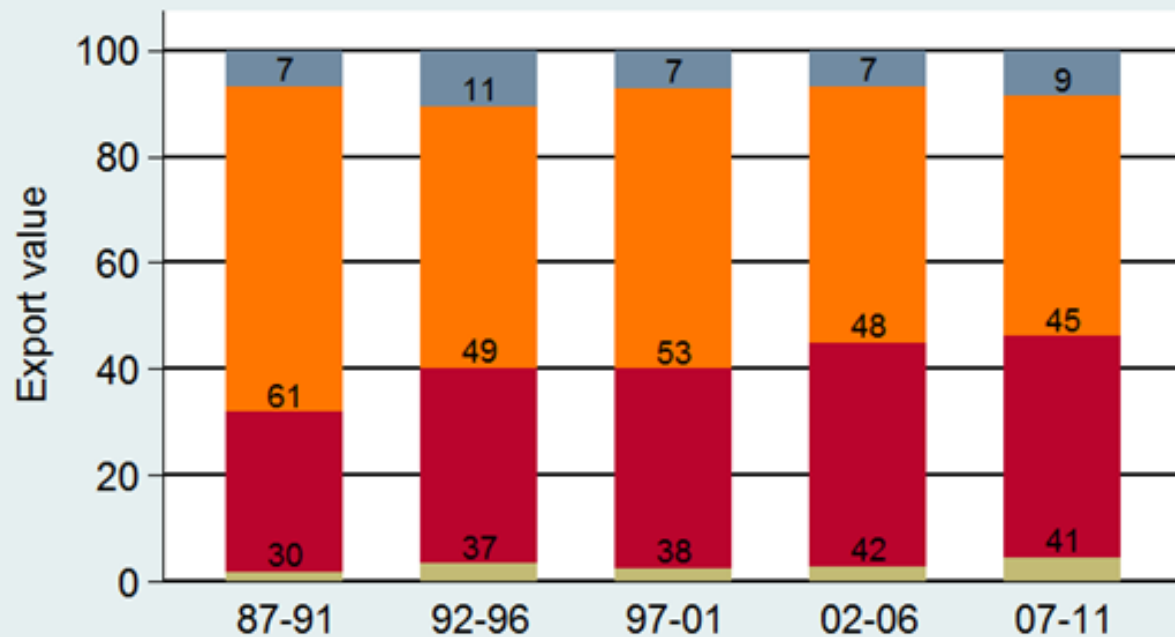
Janssens et al. (unpublished)

Sustainability in global supply chains

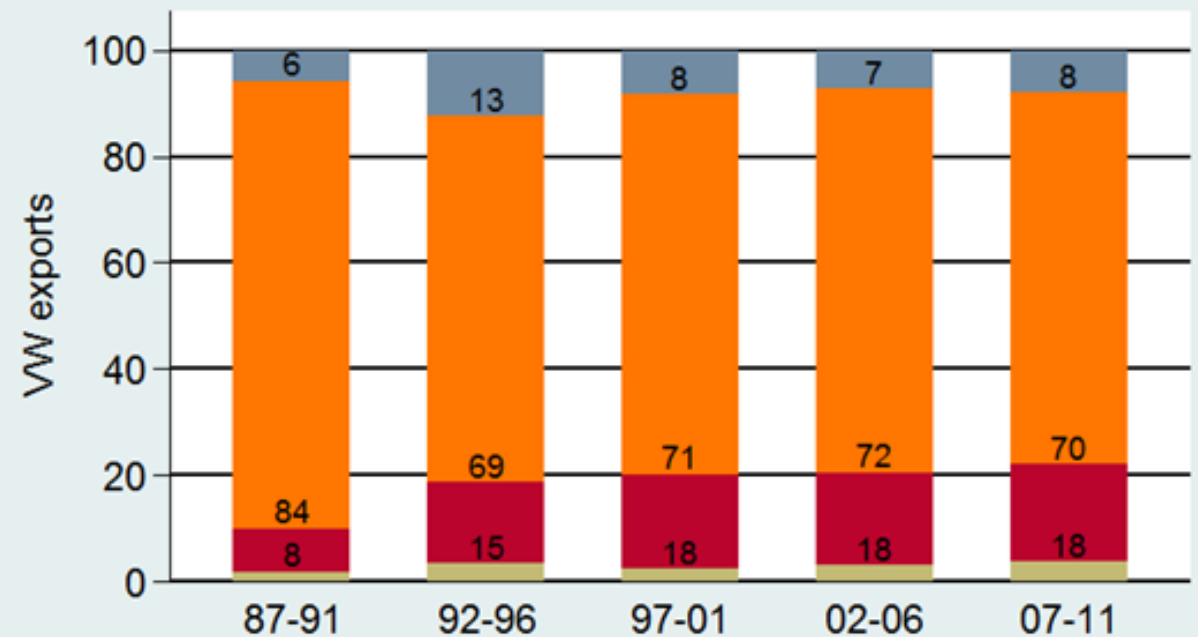
- Greenhouse gas emissions
 - GHG emissions from land use (change) much more important than from transport
 - International trade important to reduce the hunger impact from climate change
 - Value chain development important to reduce hunger at lower GHG emission cost
- Water
 - Trade and global value chains can alleviate (or worsen) water problems
 - Africa has a good 'economic water efficiency' of exports and imports
 - But local water scarcity problems exist

Sustainability in global supply chains

Value of exports from Africa

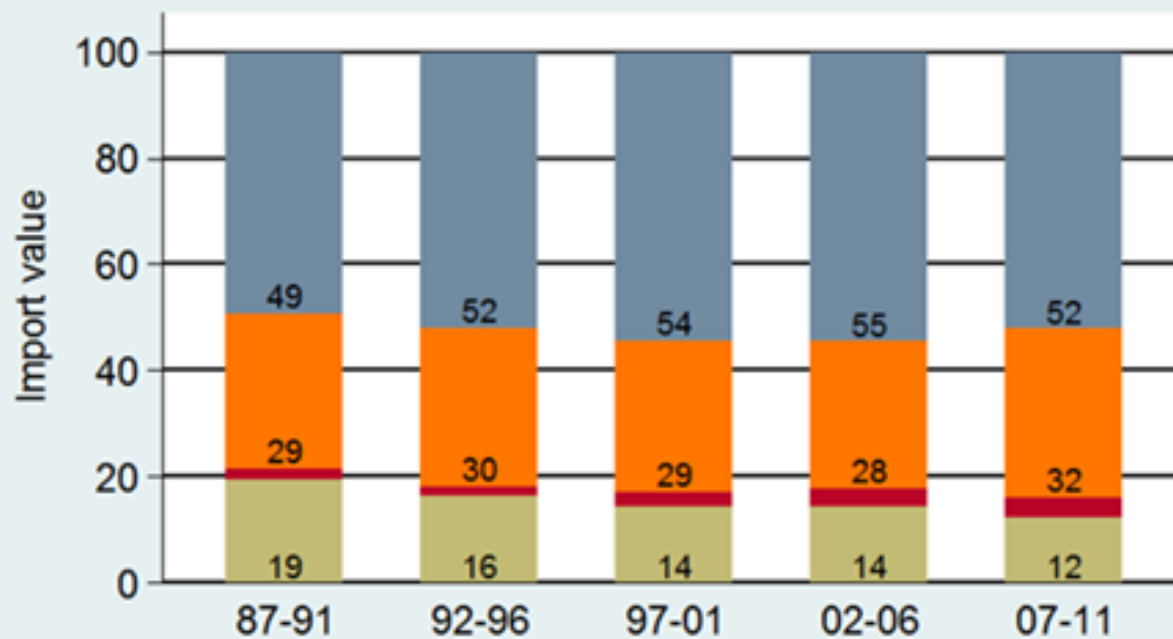


Virtual water exports from Africa

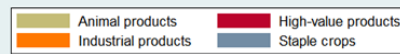
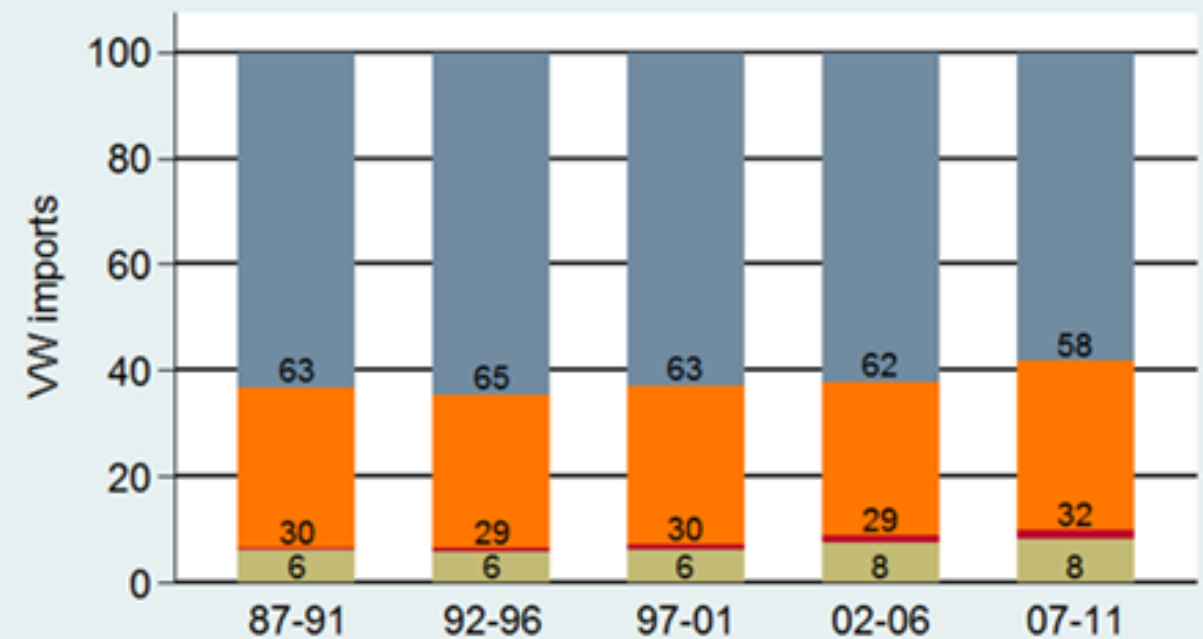


Sustainability in global supply chains

Value of imports to Africa

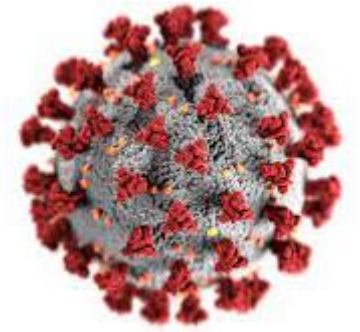


Virtual water imports to Africa



Supply chain resilience

- Covid-19 → research on **supply chain resilience**
 - › Disruptions in international & national trade
 - › Disruptions in labor supply, input supply, marketing
 - › Consequences for productivity, farm incomes & food supply
 - › Changes in food demand
- Diverging effects across supply chains?



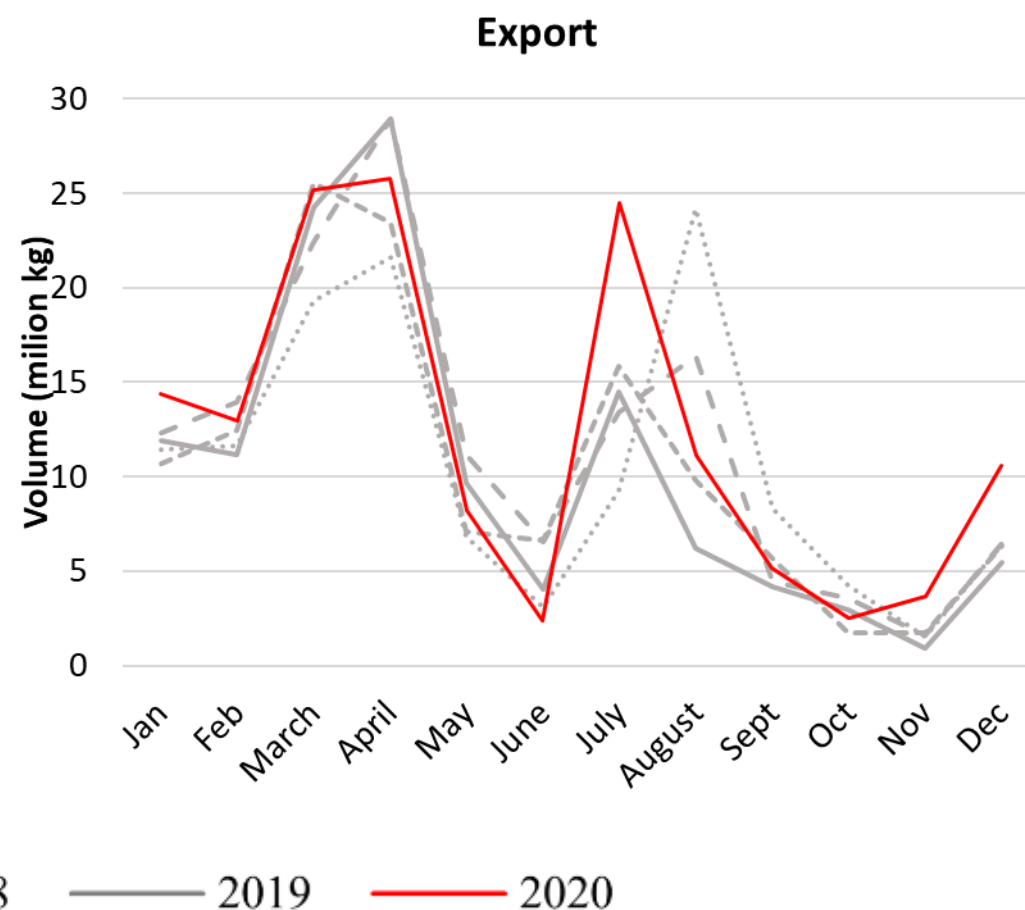
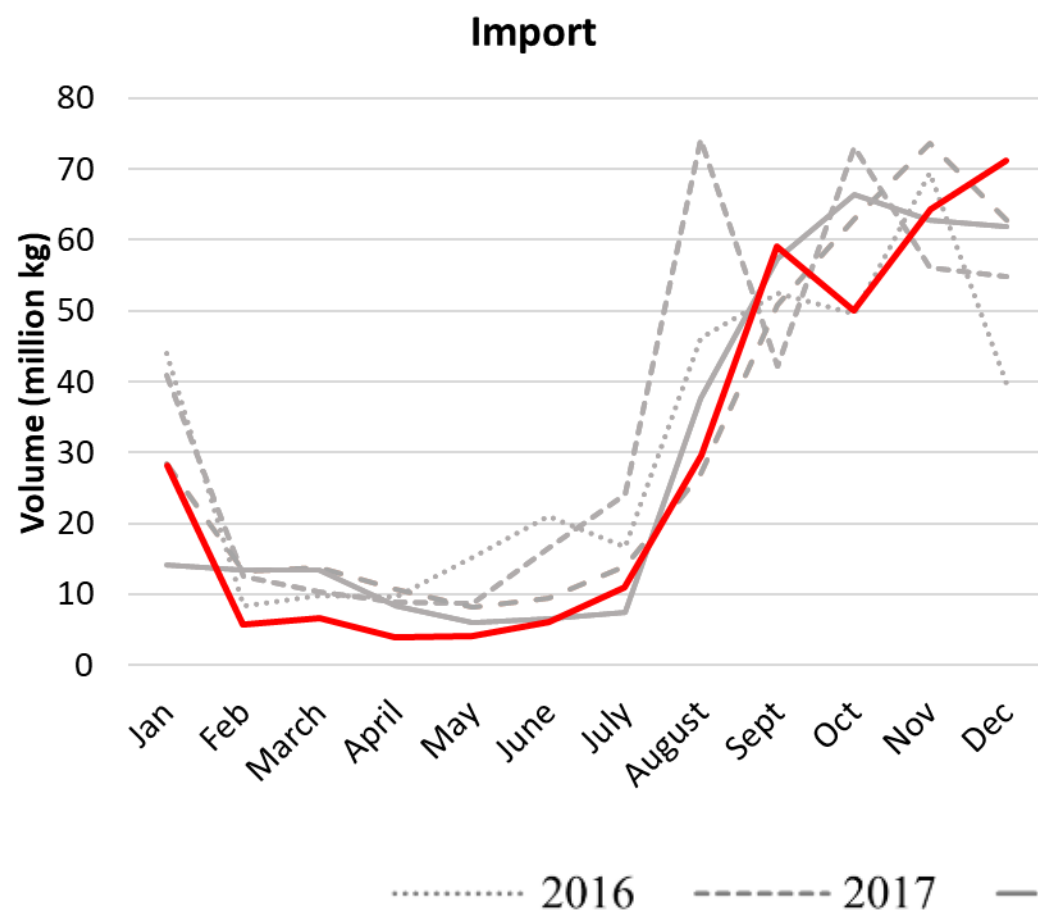
Supply chain resilience – Senegal, horticultural sector

- Data collection
 - phone & online surveys
 - mid April to mid June 2020
 - consumers, smallholder farmers, bana-banas, agro-industrial companies, workers, importers
- Data analysis
 - before and after comparison: state of emergency (March 23rd 2020)
 - global supply chain versus local supply chain

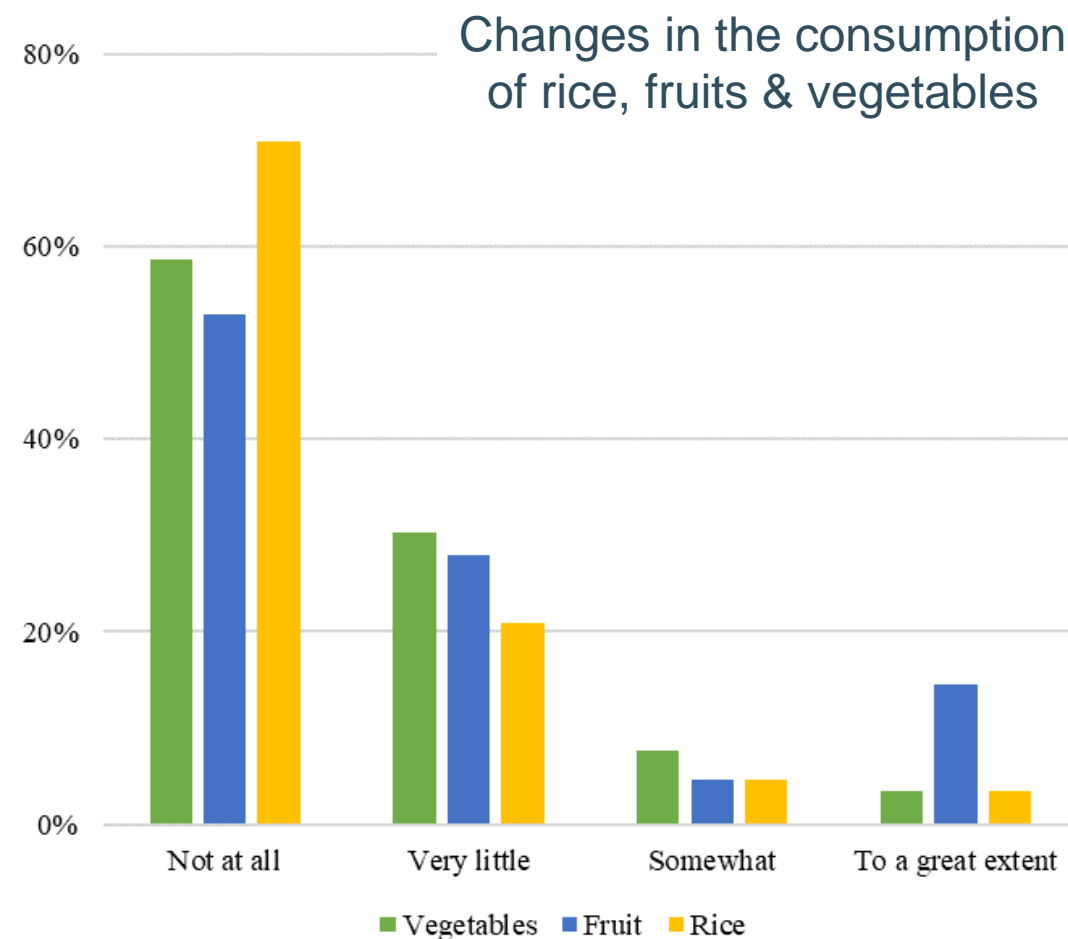
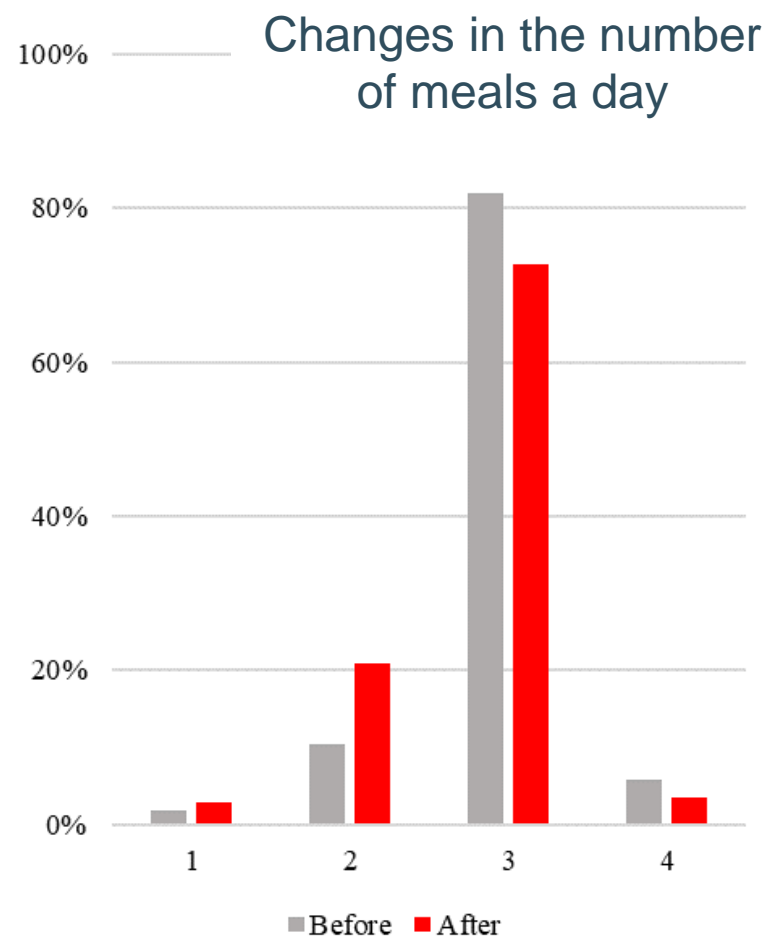


Source: Van Hoyweghen et al. in Agricultural Economics (2021)

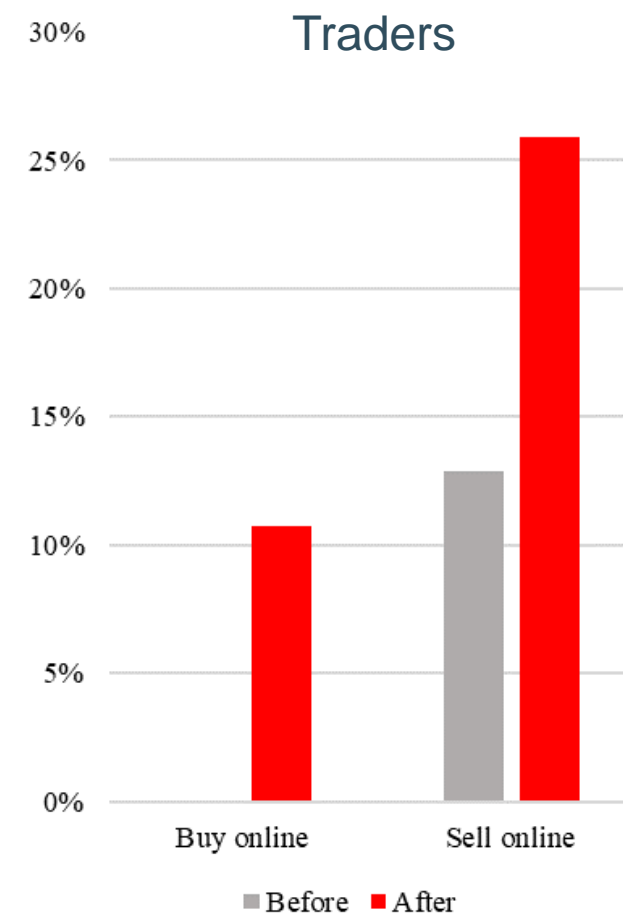
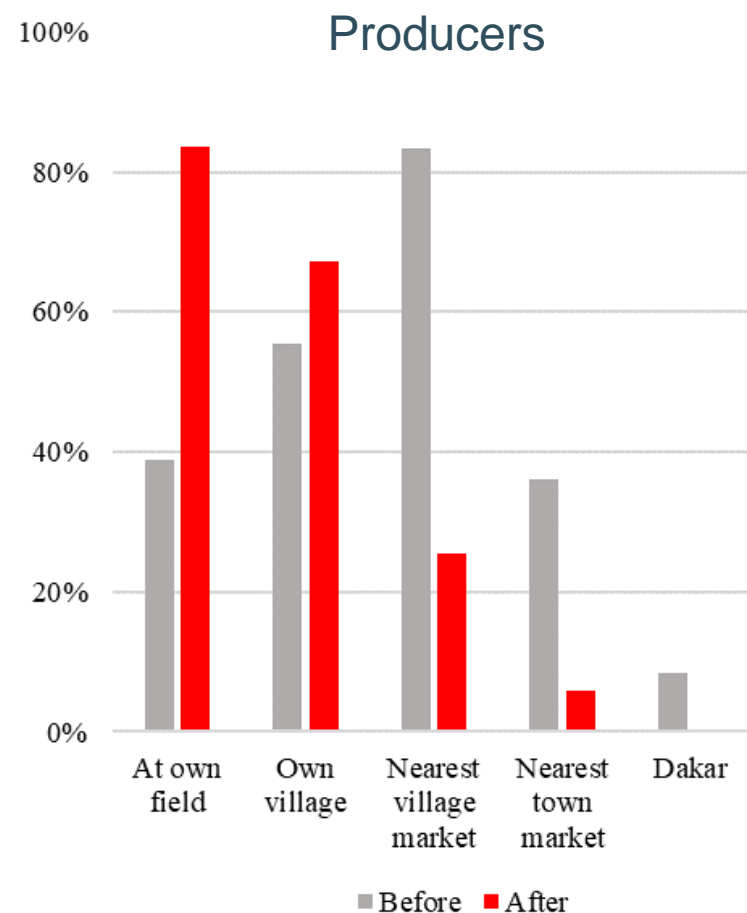
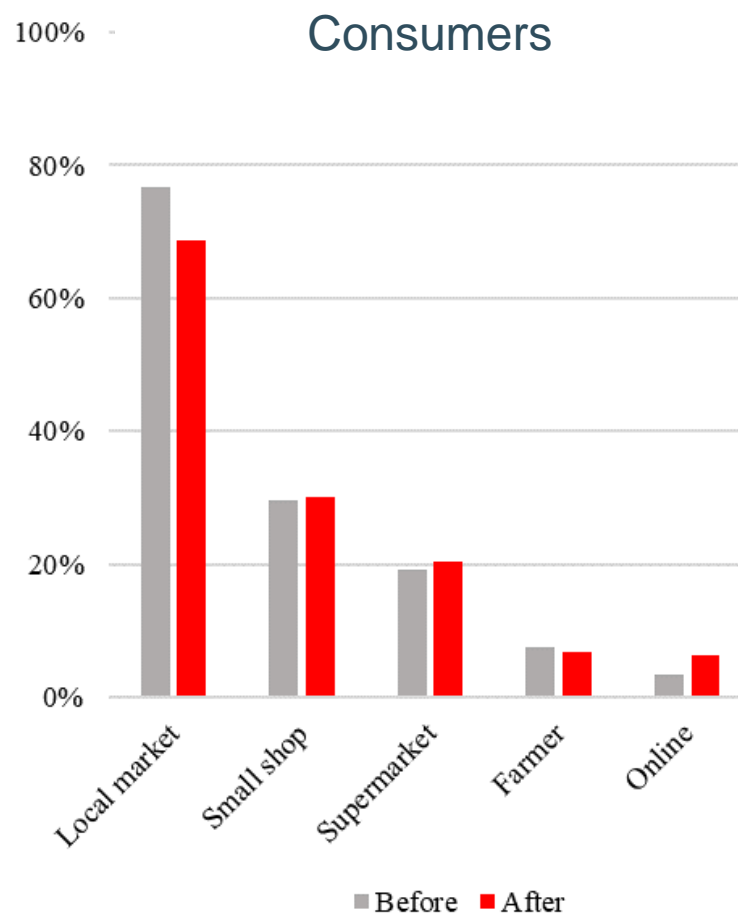
Senegal, horticultural sector – trade



Senegal, horticultural sector – consumption

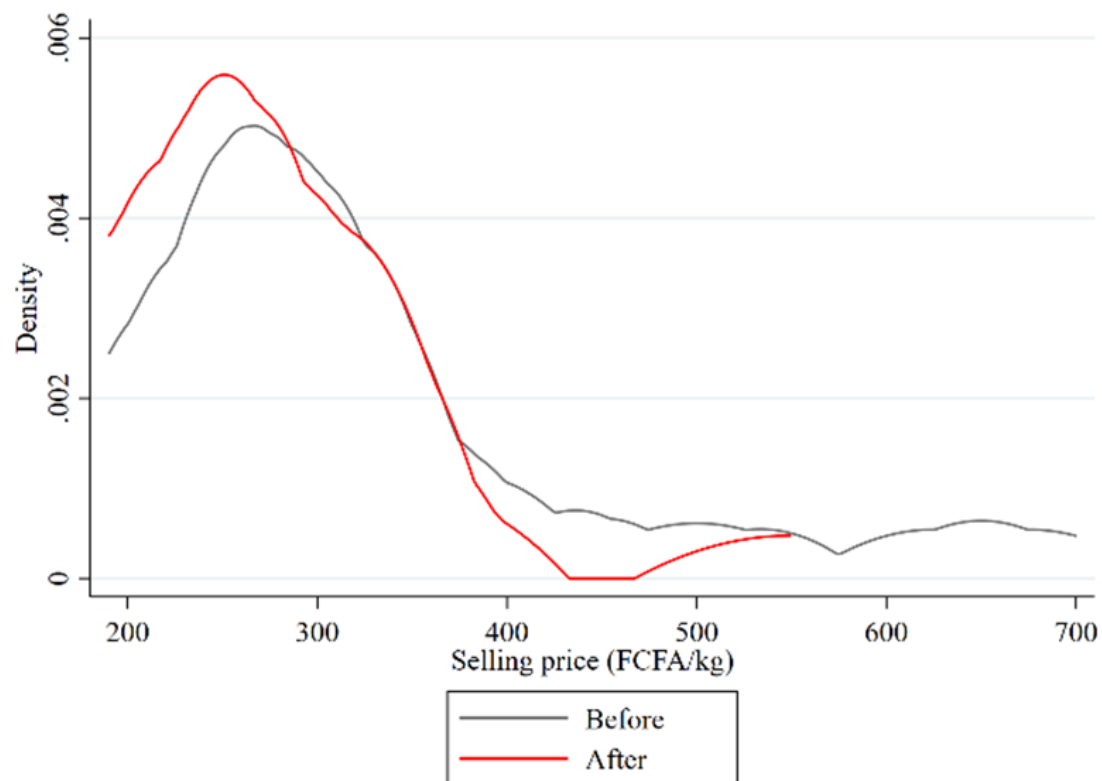


Senegal, horticultural sector – marketing

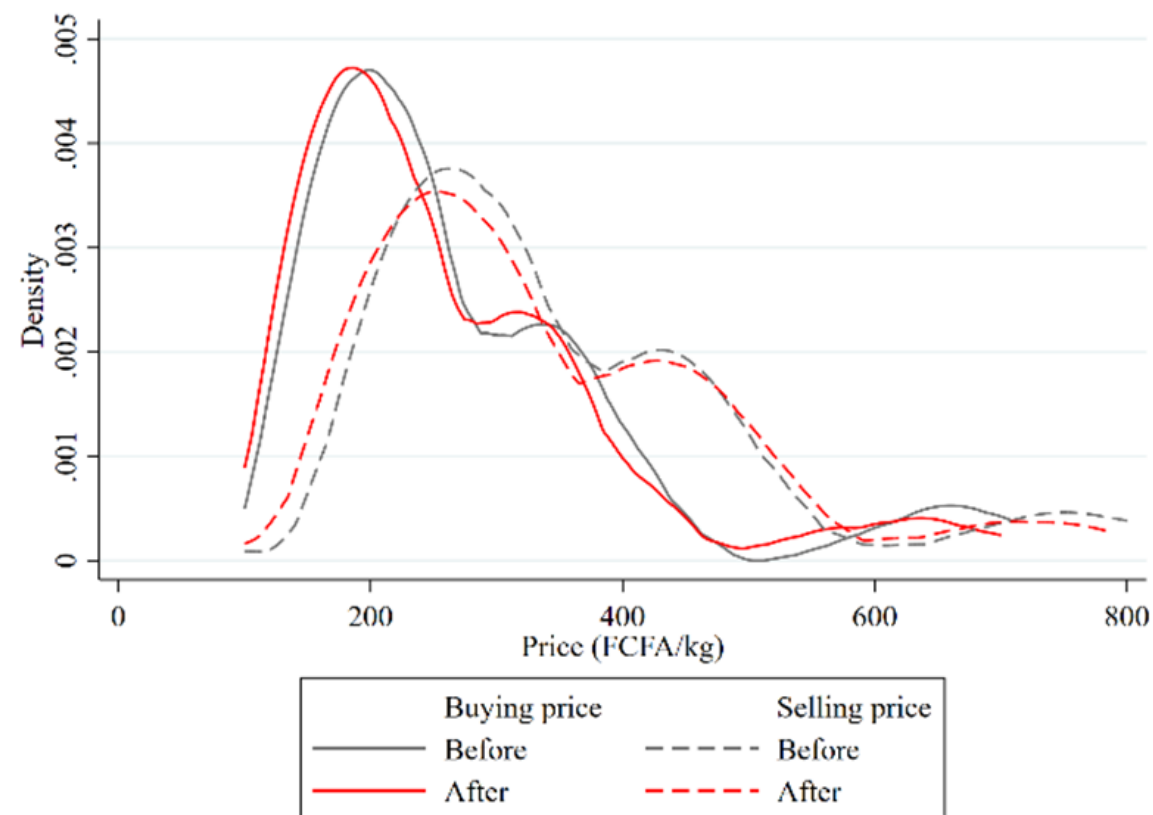


Senegal, horticultural sector – prices

Producer price



Bana bana prices



Senegal, horticultural sector – production

Agro-industrial companies

- › No change in FFV production area
- › No problems with labor supply
 - Investment in protective material & worker sanitation training
 - Changing labor shifts & social distancing
 - More frequent commuter bus service
- › Some problems with supply of inputs
 - Smaller companies face problems
 - Larger companies rely on input stocks and direct relations with input dealers

Smallholder farmers

- › Reduction in FFV production area
 - Reduction with 50 to 75%
 - Current and next season
- › Problems to hire workers
- › Problems to buy inputs
 - Mobility restrictions, closed shops & unavailable vendors
 - Increased input prices
 - Cash constraints

Some concluding remarks

- ✓ Important linkages between global and local food value chains
- ✓ Global value chains not necessarily less sustainable than local value chains
- ✓ Global value chains not necessarily less resilient than local value chains

Thanks to Anna Fabry, Hendrik Feyaerts, Kaat Van Hoyweghen, Goedele Van den Broeck