

Changes in food value chains and opportunities for agricultural and rural transformations

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Outline

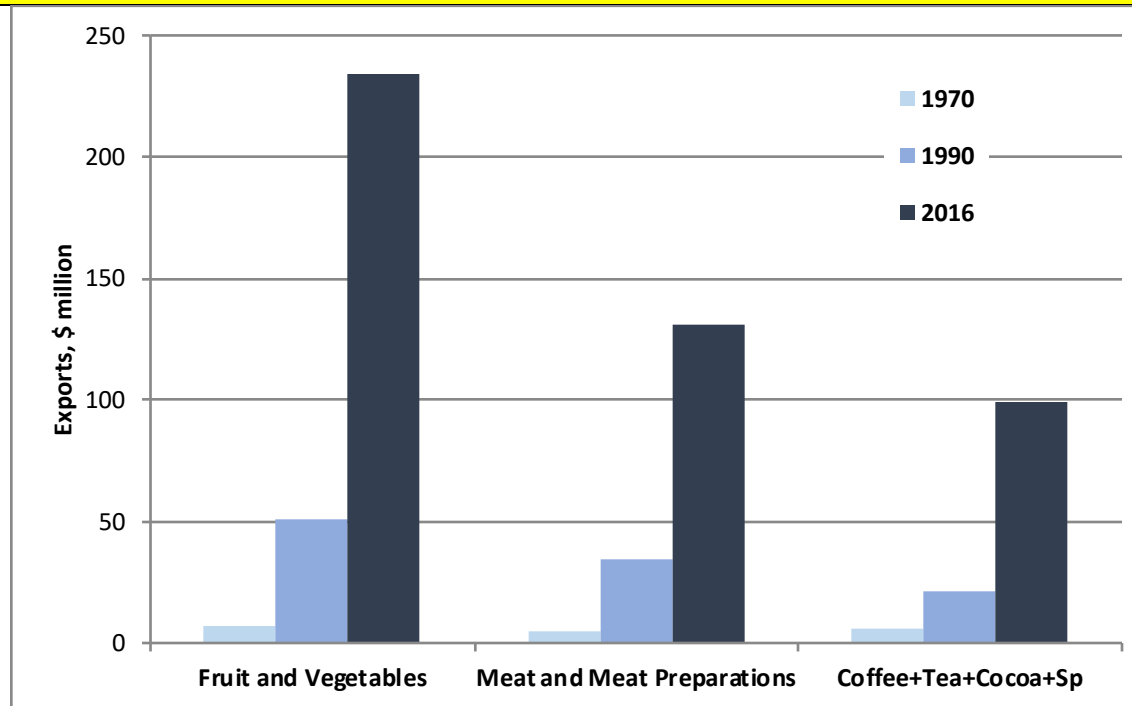
- 1.The puzzle of continued incomplete use of agriculture for development
- 2.Rapid value chain development for high-value products
- 3.Opportunities and threats for smallholder farmers
 - a.Forms of inclusion of SHF in VC: contracts and wages
 - b.Old and new constraints to inclusion
- 4.VC development as an instrument of modernization and transformation
- 5.Examples of impact of VC development on SHF modernization
 - a.Quality recognition and modernization: Senegal
 - b.Private sector extension and modernization: Odisha
- 6.Conclusion: Toward a program for SHF competitiveness in VC
Coordination/assets/contracts/private agents/
transformations

1. The puzzle of continued incomplete use of agriculture for development

- **Main message of WDR 2008:** agriculture-based countries (most SSA) must **invest more** in agriculture for growth, food security, and poverty reduction, esp. in context of MDG1 and climate change
- **Observe an increase** in public investment in Ag in context of food crisis: from **3** SSA countries meeting the CAADEP goal of 10% of public budget to Ag in 2007, to **10** in 2009; 60% increase in ODA to Ag in 2007-09 period
- **But effort not sustained:** down to **2** CAADEP-10% countries in 2014. Sharp decline in investment in Ag R&D in SSA
- **Widening gaps** in fertilizer use, cereal yield, and irrigation between SSA and Rest of the World
- Yet, a majority of **world extreme poor** households are in SSA (a rising share), are rural, and depend on agriculture

- And rising **agro-pessimism** and **public neglect** of Ag
- Yet, **WDR 2008 message** on more investment in Ag still advocated by WB, FAO, IFAD, many bi-laterals
- **Hypothesis:** Low effective return to public investment in Ag discourages investment
 - **World Bank** (Goyal & Nash) explanation for low return: public investment diverted to unproductive subsidies
 - **Alternative interpretation:** low success with technological upgrading in smallholder farming
- **Hence propose:**
 - Support Value Chain Development (VCD): public-private-civil society coordination
 - Promote SHF participation to Value Chains
 - Use VC participation as an instrument for modernization and transformation

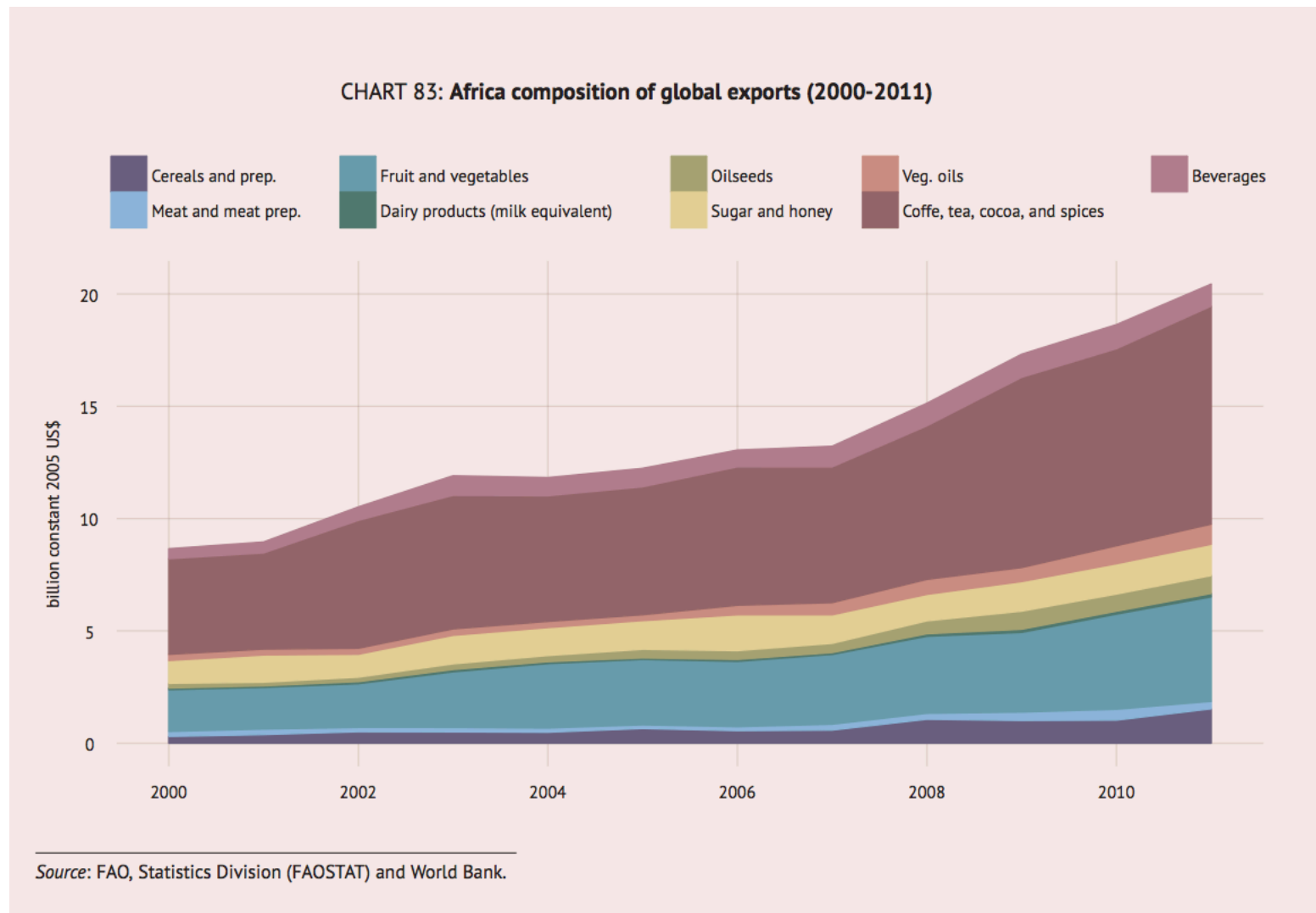
2. Rapid value chain development (VCD) for high-value products



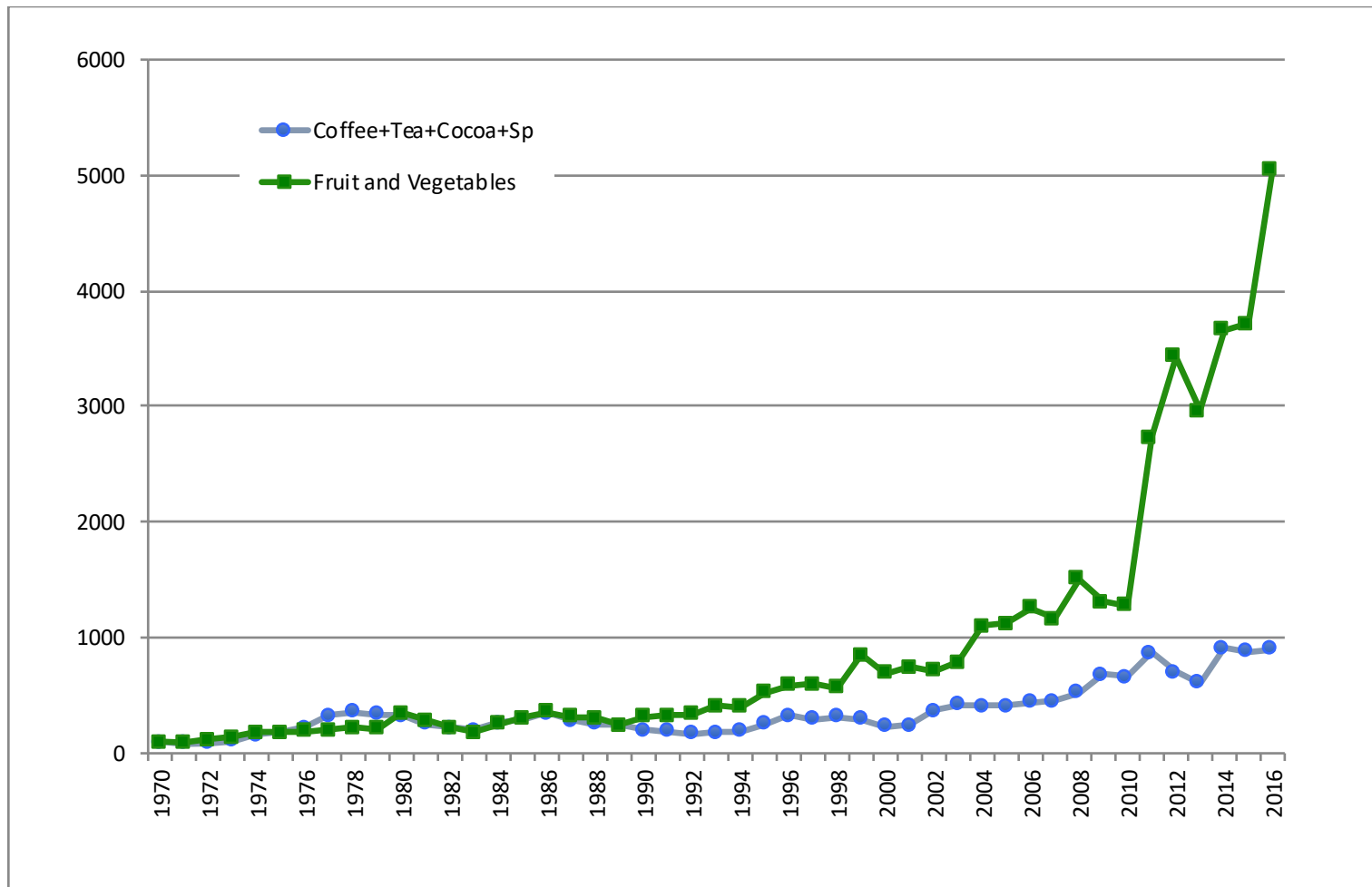
World exports of high value products, 1970, 1990, 2016

Source: <http://www.fao.org/faostat/en/#data/TP>

Rapid globalization of VC in high value products



Africa: Rapid expansion of exports of coffee-tea-cocoa and of fruits and vegetables



Western Africa. Export value, 1970=100

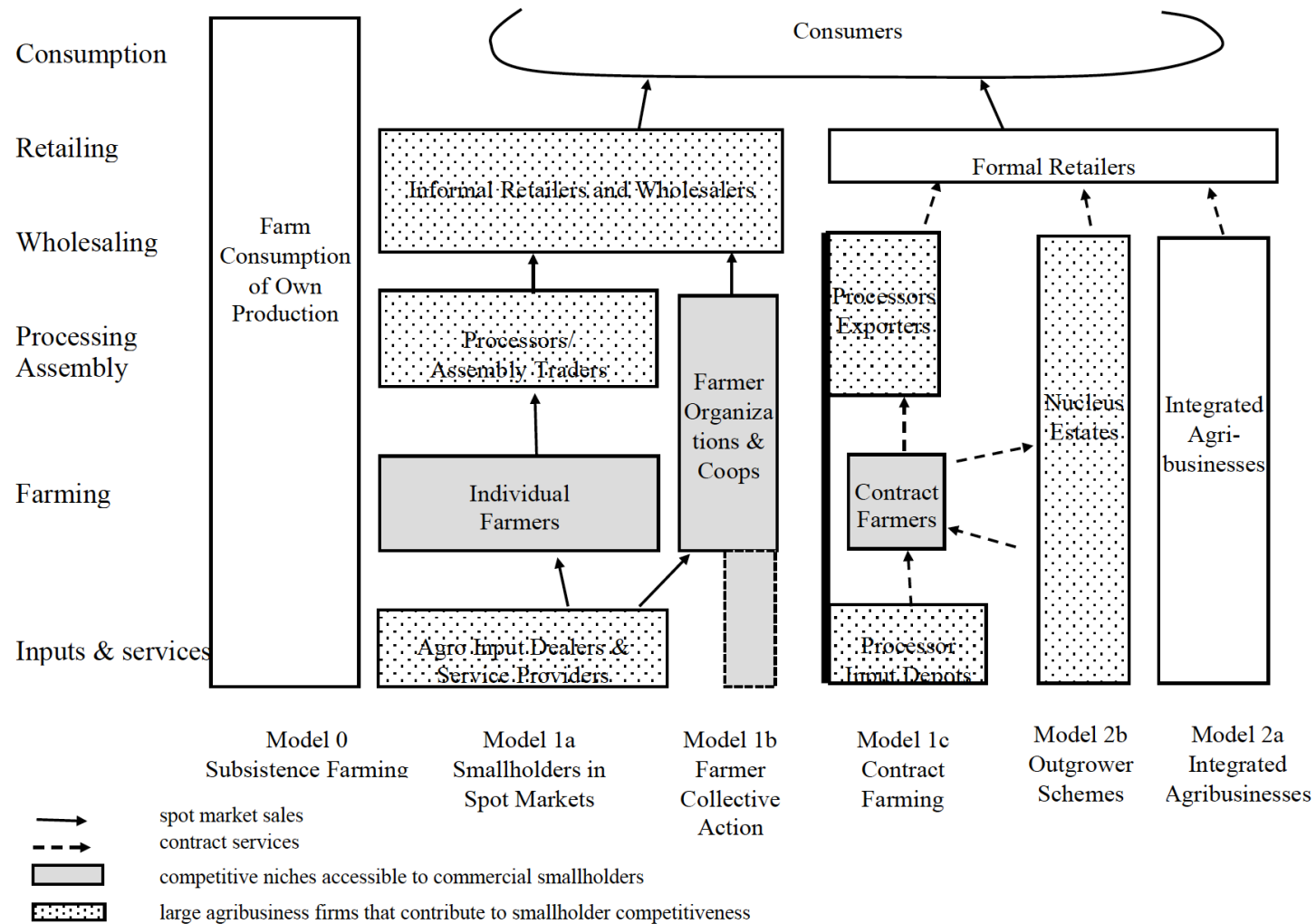
Also rapid expansion of supermarkets (quality standards) and consumption of processed foods, importantly delivered by imports

3.Opportunities and threats for smallholder farmers participation to VC: Old and new constraints

3.1.Forms of inclusion of SHF in VC: contracts and wages

Four options for agroindustry/agroexporters/supermarkets to procure supply:

- **Spot markets**, through intermediaries
- **Vertical integration**
- **Outgrower contract farming** with medium farmers, preferred supplier intermediary
- **“Productive alliance”**: contract between a smallholder Producer Organization and a commercial partner
- **“Aggregation schemes”**: contract between an agroindustry and SHFs



Byerlee and Haggblade-Alternative business models for smallholder agriculture:
 → Shows importance of market structure, PO, contracts, interlinked transactions, labor market with vertical integration

3.2. Old and new constraints to inclusion

Persistent old challenges to smallholder competitiveness

- **Land assets**
 - **Incomplete property rights:** insecurity of access to land and lack of collateral
- **Non-land assets**
 - **Credit and insurance market failures:** microfinance revolution not a solution for agriculture, lack of risk sharing instruments
 - **High transactions costs** on markets
 - **Lack of bargaining power**

Additional new challenges to smallholder competitiveness

- **Economies of scale in production:** management skills, precision farming
- **Large economies of scale in participation to value chains:** input supply, contracting on markets, processing of harvest, transport and storage
- **Large economies of scale in quality recognition and certification:** SPS standards, grading, timing, traceability
- **High administrative skill requirements:** Information on dynamic markets, rapidly changing technology
- **Costs in contract farming:** high cost of individual outgrower contracts, lack of bargaining power, discipline in collective action, and potential hold up by commercial partner
- **Importance of spillover effects:** clusters and infrastructure corridors (multiple equilibria)

4.VC development as an instrument of modernization and transformation

4.1.VCD as an instrument for modernization

Modernization

- **Direct effects:**
 - Access to markets, more favorable prices, quality recognition
 - Access to resources through resource-providing contracts: credit, inputs, information, technical assistance, quality control, price guarantees
- **Indirect effects:** behavioral changes, re-optimization
 - Additional investments
 - Adoption of new technologies, modernization

4.2.VCD as an instrument for transformations

Stages of transformation	Processes
Asset building	Access to land and human capital for the landless and sub-family farmers
Green Revolution	Adoption/diffusion of HYV seeds and fertilizers for staple crops
Agricultural Transformation	Access to water for irrigation Ag diversification toward high value crops Development of value chains and contracting
Rural Transformation	Mechanization and land concentration Development of land and labor markets Growth of a rural non-farm economy (RNFE)
Structural Transformation	Rural-urban migration Urban-based industrialization and services

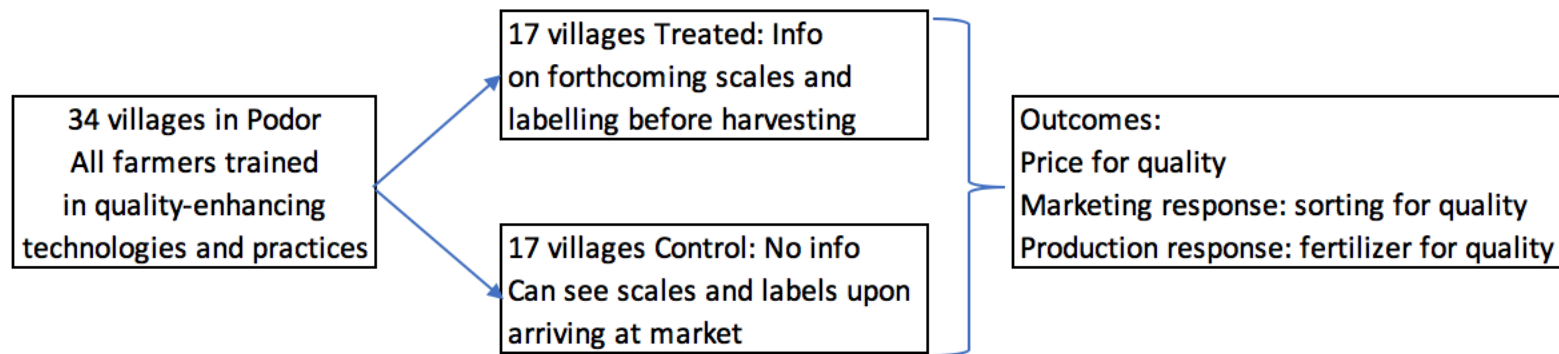
VCD for the AB-GR-AT-RT-ST sequence

5.Examples of impact of VCD on SHF modernization

Question: Can VCD induce technology adoption and modernization?

Example 1: Third party certification: quality recognition for onions in Senegal (Bernard et al., 2017)

- **Domestic onions** not competitive with onions imported from Holland
- 7 months **import ban** and 35% **import tariff**: high cost on consumers
- Meant to **help domestic producers** keep access to domestic market and achieve competitiveness, especially through quality enhancement
- **Intervention**: VCD through introduction of quality recognition: scales and labels with grades
- **Context**: distant market (Podor), merchant power (banabanas and coaxers), strong VC coordination (regional development agency SAED and local University Gaston Berger)
- **Current sale (control)**: by full bags and hence on volume .Use urea for large but perishable onions
- **Experiment**:



- **Universal** training on quality enhancing technologies (SAED, Gaston Berger University)
- **Treatment:** 34 villages informed on scales and labeling at planting time
- **Control:** 34 villages informed on presence of scales and labels



Sorting onions for quality recognition in Podor

- **Results**

- **Direct** (VCD): increase in price for high quality onions
- **Indirect** (behavioral responses):
 - All farmers increase sorting as can see presence of scales and labels upon arriving at market
 - 9% decline in incidence of use of volume-enhancing urea
 - 27% increase in incidence of use of weight-enhancing NPK
 - 300% increase in kg/ha of NPK
- **Outcomes**
 - 16% increase in likelihood of onion being of high quality
 - 6-9% increase in price received (pass-through to farmers)
 - 11% increase in net income/ha

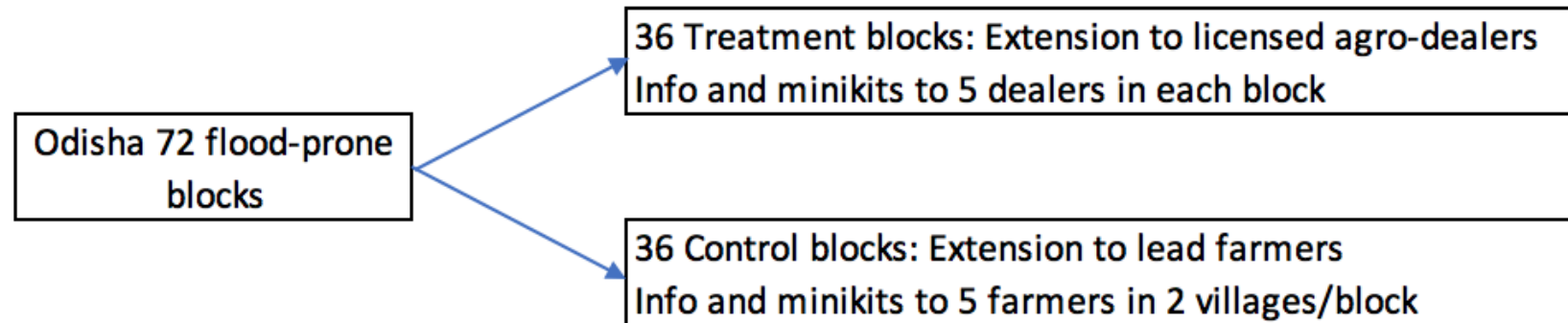
- **Conclusion**

- Reverse Akerlof lemons effect: good products drive bad out of market
- VCD leads to modernization: technological change in production and sorting in marketing practices

Example 2: Enhancing the role of agro-dealers as agents of technology diffusion (Emerick et al., 2018): role of private sector in VCD

- **Public extension** system fails to reach a large majority of SHF in Odisha, India
- **Traditional extension:** AEOs give information and seed minikits to selected lead farmers, who are in turn expected to pass information to other farmers through their social networks
 - But problem of incentive for lead farmers
- **Dealer-based extension:** AEO gives information and minikits to agro-dealers, who invite client farmers to purchase the new seeds
 - Incentive compatible with profit-making in repeated game with clients (truthful information)

- **Design of randomized controlled experiment:** diffusion of SwarnaSub1 flood tolerant rice seed variety



- **Main outcome:** adoption by farmers in corresponding block



Odisha: AEO training of lead farmers and agro-dealers



Agro-dealers in Odisha

Results

- Dealer-extension increases adoption by 55%
- Dealer-extension better at targeting farmers in flood-prone areas
- No evidence that dealer-extension benefits more large and wealthy farmers
- SS1 seeds more available with dealers in treatment blocks
- Treatment dealers 25% more likely to mention SS1 to clients

Conclusion

VCD with information roles for agro-dealers supports SHF inclusiveness and modernization

6.Conclusion: A program for SHF competitiveness in VC

- Agriculture still vastly under-used for development
- Under-use likely due to poor performance in attempting to use it: slow progress with modernization of SHF agriculture
- Rapid VCD creates opportunities and threats for SHF competitiveness and welfare
- Important to help SHF achieve inclusion and competitiveness in VC
- Major ingredients to this program
 - Vertical coordination in VCD
 - Access to assets for SHF: resource-providing contracts
 - Fixing markets for quality recognition
 - Third-party certification
 - Productive alliances
 - Mobilizing private agents for VC inclusiveness: ag-dealers
 - Using VCD for agricultural and rural transformations