Value Chain Laboratory

Measuring agency behaviour and VC interactions

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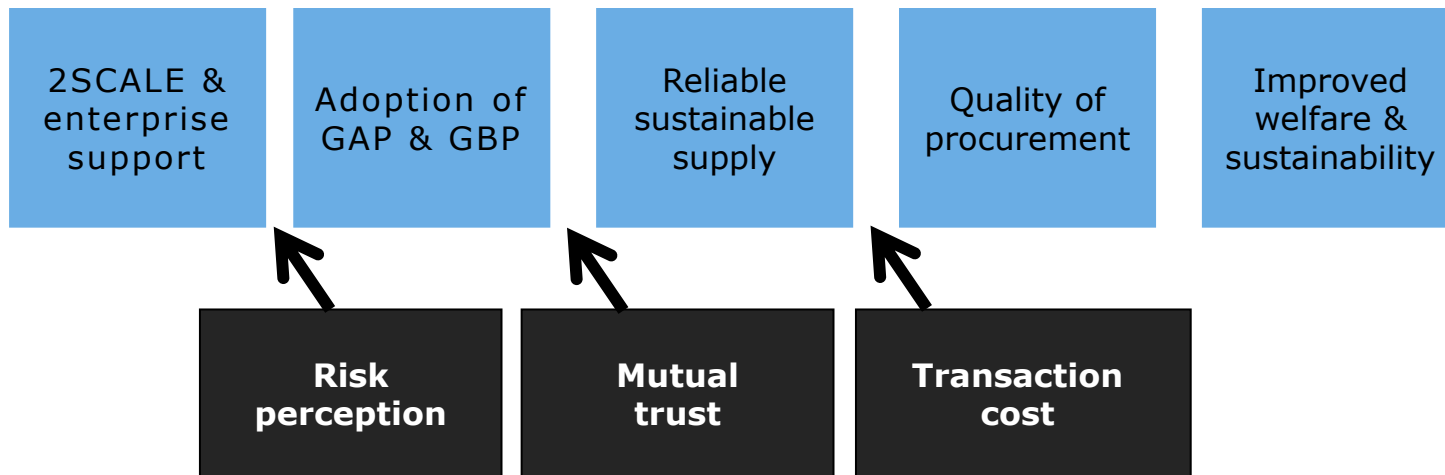*For quality of life*

Introduction

Background

- Sustainable development

- Fostering of inclusive value chains

- Alternative impact assessment tools

- To measure behavioural change and Value chain interactions

- Explorative study : VC lab

- SCALE program of IFDC and partners

- Publication and dissemination: co-financed by the Ministry of Economic

  Affairs, the Netherlands (KB22)

Intervention

The intervention

2SCALE : Towards Sustainable Clusters in Agribusiness through Learning in Enterpreneurship

Aim : to improve rural livelihoods

Scope : 9 African countries

Activities : support to supply chain *agents* through training, certification, information exchange, market positioning and stimulation of contractual arrangements.

Intervention logic

| 2SCALE & enterprise support | Adoption of GAP & GBP | Reliable sustainable supply | Quality of procurement | Improved welfare & sustainability |

Risk perception | **Mutual trust** | **Transaction cost**

The assessment of changes in the relationships between supply chain agents is considered fundamental for market transformations.

Value Chain laboratory objectives

- The Value Chain Lab (VC-Lab)

- An alternative assessment tool

- Three tools

- The VC-Lab has been tested to evaluate 2SCALE

  - **Kenya: sorghum**

  - Ghana: soya

  - ?

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End product: Senator Keg beer

Methods: 3 tools

1. Value chain mapping & analysis

2. Games measuring risk attitude, (mutual) trust & collective action

   Participative gaming approach to identify changes in trust and risk attitude.

3. Agent-based model

   The model mirrors simulations with actual value chain participants and provides future prognoses on developments and potential impacts of development programs.

Data required

- Personal, farm and marketing characteristics
- Price setting main crop and other crops
- Price processor versus market versus farm gate price
- Production and labour costs
- Post harvest cost & transaction cost
- Access to inputs and loans, insurance / resources
- Yields, productivity
- Natural circumstances: weather / climate / soil
- Support received, training/awareness, skills
- Support received: inputs, loans
- Contractual arrangements
- Risk aversion / risk taking
- Trust in processor / contract compliance (trust updates)
- Loyalty, side selling, honesty
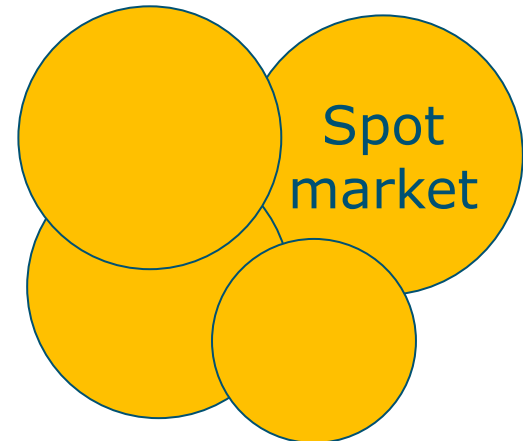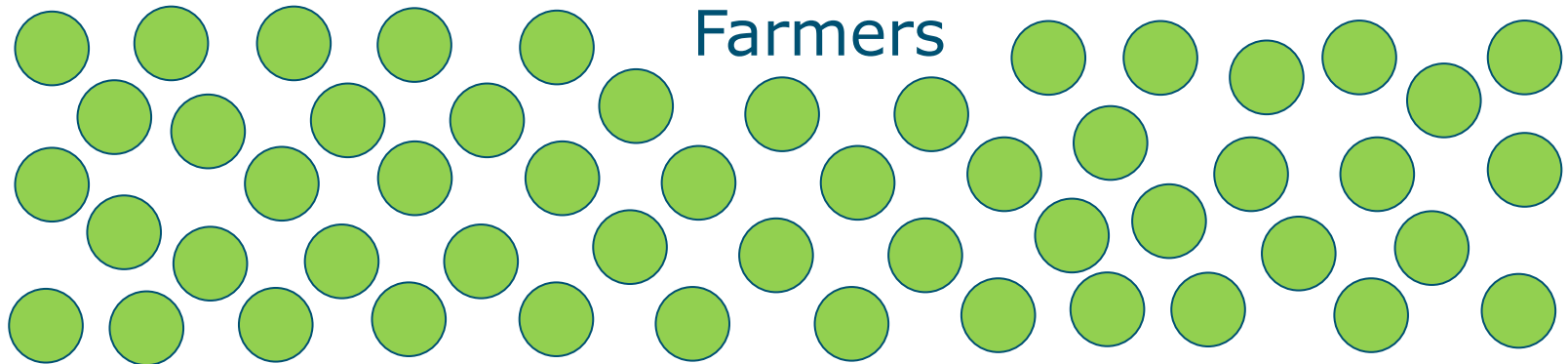- Trust in co-farmers, trust in group (free-riding)

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VC mapping
Sorghum farmers group

Agent-based simulation version 0

Production resources including loans

Farmers

Processor

Spot market

Simulations 10,000 farmers, 10 years

Main results on intervention:
Reputation and trustworthiness crucial

	Trust	Risk	TC
Games	++	++	
Model	+	+	+

Main results on intervention:
Reputation and trustworthiness crucial

- Trust of farmers = higher in processor of intervention compared to

  - other processors and brokers and
  - to farmers not being targeted

- Risk aversion is high and equally high among farmers in the treatment and comparison group

- Approach IFDC can lead to higher farm incomes and profitable processor. Trust = key success factor.

- It is crucial for a stable contract supply to provide stable and high contract price against uncertain alternative.

- Improving skills leads to increased sorghum production and volumes.

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Results on methodology

- Games enable a good measurement of change in trust levels.

- Games enable a good measurement of risk attitude.

- Games provided crucial parameters for agent based modelling if conducted over time and with counterfactual.

- The agent based model provided good simulations of trust and risk.

- More data on transaction costs over time is needed.

- For simulating intervention impacts more data is needed.

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Conclusion

The VC-Lab

Promising method in measuring behavioral and relational changes, to simulate decision making of value chain actors and potential impact of VC development interventions.

However further development is required.

Discussion & outlook

Related to VC games:

- No computerized game possible in these contexts;

- High costs of psychical presence and real life game setting;

- Simulation needed of behavior of VC actors other than producer;

- No anonymity, so possible socially desired behavior;

- No data over time complicating parameters for the model;

- Comparison group is too small or absent.

Discussion & outlook

Related to the agent based model:

- Highly depending on the data of games (trust & risk);

- Data over time and comparison needed;

- Not all necessary parameters and data for modelling available via

  literature and desk study, implicating high costs.

Not stuck but some work to do