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Contract farming for rural transformation and market access to smallholder farmers in the rice value-chain: A randomized control trial approach

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Background

- ❑ Rice is an important dietary energy source in West Africa and Madagascar and is becoming important in the rest of Africa
- ❑ **Demand is growing at more than 6% per year – faster than for any other food staple in SSA**
- ❑ For Africa Rice, developing the rice value chain is a key strategy for poverty alleviation and food security improvement



Background

- ❑ In SSA, smallholder rice production is mainly for consumption, **low productivity and not integrated into the commercial value chain**
- ❑ One of factors responsible for this is the weak link between the different actors in the value chain
- ❑ **Contract farming (CF)** is an institutional form that could **strengthen the links between actors** and **promote rural transformation**

Background

- ❑ Contract farming are agreements between different value chain actors - from production to marketing including financial and insurance institutions
- ❑ Contractual arrangements aim to benefit each party which may eventually make the chain more efficient
- ❑ The objective of this research is to quantify the impact of **different attributes** of contractual arrangements on rural transformation outcomes

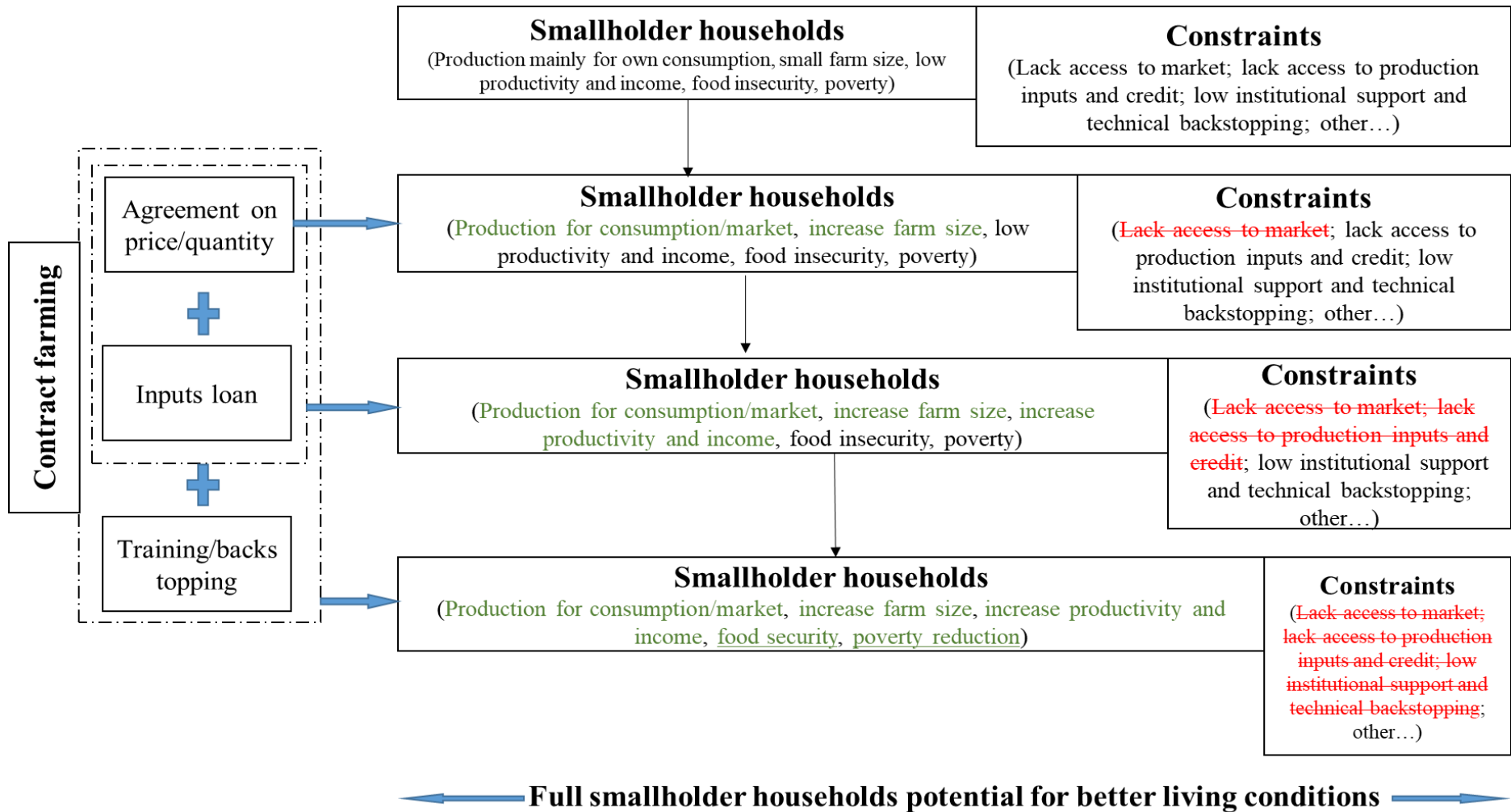
Contribution to literature

- ❑ One strain of literature claims contract farming has positive impacts on household welfare
 - ❑ Barrett et al., 2012; Bellemare, 2010; Kirsten and Satorius, 2002; Reardon et al., 2009
- ❑ A separate strain is more dubious regarding the benefits of contract farming to smallholders
 - ❑ Singh, 2002; Guo et al., 2005
- ❑ This paper is the first to use a randomized control trial to explore the impacts of contract farming on smallholder farmers

Theory of change

- Mighell and Jones (1963) classified contract farming schemes into three categories:
 - market-specifying contract;
 - resource-providing contract
 - production-management contract
- For rural transformation, three contract farming **attributes** can be combined (i) agreement on price and quantity, (ii) input loans, (iii) training and backstopping for farmers

Theory of change



Experimental design

- ❑ We randomized farmers into either 1 of 3 types of contracts or into a control group
 - ❑ T1: miller provides an agreement on **sale price and quantity, plus input loans and technical training**
 - ❑ T2: miller provides an agreement on **sale price and quantity, plus technical training**
 - ❑ T3: miller provides an agreement on **sale price and quantity**
 - ❑ C: control farmers with no agreement
- ❑ Outcomes of interest are 4 rural transformation indicators: **farm size, productivity, market participation, and income**

Data analysis

- ❑ Baseline data was collected in 2015
 - ❑ Targeted farmers who had grown rice in the previous year and who expressed interest in growing rice in 2016
 - ❑ Data collected prior to random assignment
- ❑ Prior to 2016 growing season, farmers randomly assigned into one of the 4 groups
- ❑ End-line data was collected at harvest
- ❑ Econometric method
 - ❑ Simple difference-in-difference and difference-in-difference with covariates

Results

□ Impact of CF on farm size

	Farm size (ha)
Price and quantity agreement (T3#C)	
Using with-without difference	0.23*** (0.07)
Using double difference (DD)	0.20** (0.08)
Using DD with covariates	0.24*** (0.06)
% of increase	31.40
Input loan and training/backstopping agreement (T1#T3)	
Using with-without difference	0.14** (0.04)
Using double difference (DD)	0.18** (0.07)
Using DD with covariates	0.23*** (0.08)
% of increase	38.98
Input loan, training/backstopping and price and quantity agreement (T1#C)	
Using with-without difference	0.24*** (0.05)
Using double difference (DD)	0.31*** (0.08)
Using DD with covariates	0.34*** (0.09)
% of increase	44.74

Results

□ Impact of CF on productivity

	Productivity (kg/ha)
Price and quantity agreement (T3#C)	
Using with-without difference	480.83*** (181.38)
Using double difference (DD)	486.43*** (155.87)
Using DD with covariates	477.99*** (161)
% of increase	28.93
Input loan and training/backstopping agreement (T1#T3)	
Using with-without difference	513.37*** (182.44)
Using double difference (DD)	568.39*** (196.33)
Using DD with covariates	578.17*** (175.31)
% of increase	24.77
Input loan, training/backstopping and price and quantity agreement (T1#C)	
Using with-without difference	567.45*** (195.56)
Using double difference (DD)	633.90*** (284.86)
Using DD with covariates	608.48*** (288.08)
% of increase	36.83

Results

□ Impact of CF on market participation

	Participation (% rice sold)
Price and quantity agreement (T3#C)	
Using with-without difference	30.19*** (5.62)
Using double difference (DD)	34.83*** (6.33)
Using DD with covariates	33.77*** (6.40)
% of increase	135.29
Input loan and training/backstopping agreement (T1#T3)	
Using with-without difference	18.61** (4.52)
Using double difference (DD)	11** (5.23)
Using DD with covariates	11.78** (5.23)
% of increase	25.60
Input loan, training/backstopping and price and quantity agreement (T1#C)	
Using with-without difference	41.15*** (5.64)
Using double difference (DD)	44.26*** (5.74)
Using DD with covariates	43.67*** (5.79)
% of increase	181.95

Results

□ Impact of CF attributes on **Income**

	Income (US\$/ha)
Price and quantity agreement (T3#C)	
Using with-without difference	166*** (84)
Using double difference (DD)	118*** (52)
Using DD with covariates	122*** (54)
% of increase	23.41
Input loan and training/backstopping agreement (T1#T3)	
Using with-without difference	120** (56)
Using double difference (DD)	118** (55)
Using DD with covariates	115** (59)
% of increase	26.71
Input loan, training/backstopping and price and quantity agreement (T1#C)	
Using with-without difference	187*** (22)
Using double difference (DD)	222*** (82)
Using DD with covariates	218*** (79)
% of increase	46.12

Conclusion

- ❑ Contract farming has the potential to generate rural transformation through **increasing farm size, increasing productivity, greater market participation, and, ultimately more income**
- ❑ Contracts **providing all three attributes** (access to market, input loans, and technical training) **generated the largest gains** for farmers relative to the control
- ❑ However, **simply providing access to a reliable market** (through price and quantity contract) generated surprisingly strong impacts
- ❑ Future research should continue to explore what are the **binding constraints to rural transformation**



THANK YOU
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