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Assessing Farmers' and Buyers' Preferences for Contracts: Insights from Cotton and Tea Contract Schemes in Malawi

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Introduction

- Contract farming (CF): A pre-planting arrangement between farmers and buyers for the supply of agricultural products under agreed terms and conditions (Hueth and Hennessy 2002).
- CF is common in the production of export crops in Malawi.
(tea, cotton, tobacco, sugarcane)
- Malawi Government has developed a CF strategy to scale up the CF sector
(MoAIWD 2016).

Introduction cont..

▪ **Benefits of CF to farmers:**

- Facilitates access to farm inputs (technology, fertilizers, seeds, credit) thus increasing productivity (Ruml and Qaim 2020).
- Coupled with price and market guarantees, CF stabilizes incomes of farmers and reduces poverty (Ogututu et al. 2020).
- Creates on- and off-farm employment opportunities that contribute to rural transformation (Meemken and Bellemare 2020).

• **Benefits of CF to buyers** (contractors):

- Reduces market uncertainties
- Stabilizes prices
- Strengthens relationships/trust between companies and farmers (Ochieng et al. 2017)

Introduction cont..

- Research gap:
 - Many studies have examined farmers' preferences for contracts (Ochieng et al. 2017; Repar et al. 2018; Repar et al. 2019), but the preferences of buyers remain largely unexplored in literature.
 - The similarities and differences in contractual preferences of farmers and buyers are not yet known.

- Objectives:
 - i. To analyze farmers' and buyers' preferences for contracts
 - ii. To analyze farmers' willingness to accept contracts

Methodology

- **Sample:** farmers, contract (company) managers, Farmers Association officials
- **Sampling procedure:** A multistage sampling procedure - Purposively selected Chikwawa and Mulanje districts/ companies/Farmers Associations & probability proportionate to size to sample farmers/villages.

Table 1. Number of surveyed respondents

Attributes	Cotton (n=36)	Tea (n=30)
Contracted smallholder farmers	251	257
Non-contracted smallholder farmers	254	255
Farmers Association officials	14	5
Company managers	6	6

- **Survey:** semi-structured interviews and a choice experiment conducted by Kadale Consultants.

Methodology cont..












Table 2. Contract attributes and attribute levels

Attributes		Cotton cards	Tea cards
Price (MWK/kg)	1	300	120
	2	300 + 15	120 + 5
	3	300 + 30	120 + 10
	4	300 + 45	120 + 15
	5	300 + 60	120 + 20
	6	300 + 75	120 + 25
Delivery point	1	Farm gate	Farm gate
	2	Collection point	Collection point
	3	Buyers' premises	Buyers' premises
Quality	1	Grade B	Grade B
	2	Grade A	Grade A
Payment mode	1	Spot payment	Spot payment
	2	Within 2 weeks	Within 2 weeks
	3	After 2 weeks	After 2 weeks
Benefits	1	No benefit	No benefit
	2	Funeral insurance (2 people)	Funeral insurance
	3	Funeral insurance (4 people)	Funeral insurance
	4	Crop insurance	Crop insurance
	5	Farm inputs	Farm inputs

- A mix of real (green box) and hypothetical (red box) attributes.
- Used fractional factorial design to develop 30 choice cards.
- 30 cards split into 5 blocks each with 6 cards. Farmers were randomly assigned to blocks.

Methodology cont..

Figure 1. Sample of a choice card

	Price	Delivery point	Quality	Payment mode	Benefit
Option 1	 MWK345/kg	 Factory premises	 Grade B	Malipiro a pompompo Spot payment	 Inshwaransi ya mbewu Crop insurance
Option 2	 MWK345/kg	 Nearest collection	 Grade A	M'masabata awiri Within 2 weeks	 Inputs and/or credit
Option 3	 MWK300/kg	 Sell at Farmgate	 Grade B	Malipiro a pompompo Spot payment	 Inshwaransi ya maliro Inshwaransi ya mbewu Zipangizo za ulimi Naongole No other benefit

- Two contract options 1 and 2 and opt-out (non-contract) option 3 in each card.
- Unique pictures for each attribute level for better understanding of the trade-offs between the choice options.
- Choice cards shown to respondents on tablets.

Methodology cont..

- Analyzing preference for contracts using mixed logit model:

$$Y_{njt} = \alpha_n ASC + \beta PR_{njt} + \rho'_n AT_{njt} + \varepsilon_{njt} \quad (\text{equation 1})$$

where $Y = 1$ if farmer n chooses alternative j given choice task (options) t ; PR = price; AT is a vector of the other contract attributes (delivery point, quality, payment mode, and benefits). ASC refers to the alternative-specific constant that captures the general preferences for contracts apart from the attributes.

- Analyzing willingness to accept contracts and design attributes:

$$WTA = \frac{\partial PR}{\partial AT} = -\frac{\rho'_n}{\beta} \quad (\text{equation 2})$$

A positive WTA value (in MWK) implies acceptance of an attribute level conditional **on** a higher price. Higher values would therefore indicate that respondents consider the attribute levels critical when evaluating contract choice.

Results

Table 3. Descriptive statistics

Variables	Cotton		Tea	
	Contracted (n=251)	Non-contracted (n=254)	Contracted (n=257)	Non- contracted (n=255)
Male household head (1,0)	90.51 (1.84)	91.63 (1.75)	64.59 (2.99)	70.98 (2.85)
Age of head (years)	47.82 (0.90)	46.15 (0.94)	47.05 (0.95)	44.13 (0.96)
Education of head (years)	6.34 (0.24)	5.77* (0.23)	6.01 (0.23)	6.23 (0.22)
Family size (number)	5.64 (0.12)	5.30 (0.11)	4.59 (0.10)	4.48 (0.11)
Land owned (acres)	5.19 (0.23)	4.65 (0.16)	1.87 (0.07)	1.68 (0.08)
Farming experience (years)	20.72 (0.81)	20.88 (0.83)	18.14 (0.78)	16.81 (0.77)
Distance to nearest market (km)	2.67 (0.21)	2.19 (0.17)	5.36 (0.30)	5.55 (0.41)
Farm income ('000'MWK)	296.67 (42.85)	302.00 (201.47)	118.74 (14.96)	93.93 (14.09)
Total income ('000'MWK)	496.81 (51.27)	419.94 (203.81)	305.65 (26.12)	386.28 (99.57)

Note: Values are means with standard errors in (parentheses)

Results cont..

Table 4. Farmers' preference for contracts

Variables	Cotton farmers		Tea farmers	
	Mean	Std. Error	Mean	Std. Error
<i>Parameters</i>				
Asc	-3.049***	(0.20)	-2.03***	(0.53)
Price	1.37***	(0.39)	0.20***	(0.03)
Buyer's premises	68.98***	(59.98)	50.88**	(47.02)
Buyer's collection point	130.6***	(47.30)	54.19***	(46.21)
Grade A quality	107.5***	(14.63)	49.15**	(37.89)
Payment within 2 weeks	-22.92**	(14.09)	-7.06***	(1.20)
Payment after 2 weeks	-99.15***	(42.31)	-49.91***	(10.37)
Farmer + spouse insurance	61.47***	(57.25)	10.66**	(7.18)
Family funeral insurance	-16.82*	(15.66)	9.84**	(8.56)
Crop insurance	29.25**	(22.16)	47.62	(50.46)
Farm inputs	109.6***	(48.41)	58.29***	(41.89)
N (number of farmers)	505		512	
N (Number of observations)	9,090	9,090	9,216	9,216
Pseudo R2	0.24		0.28	
Wald χ^2	206.22***		215.30***	

- Farmers have a positive attitude towards contracts.
- Farmers prefer to contract for better quality product (grade A) relative to lower quality product (grade B).
- Farmers prefer deliveries at buyer's collection points or company premises relative to farm gate.
- Farmers dislike contracts with delayed payments after sales.
- Farmers prefer contracts that cushion them against farm-level risks.

Results cont..

Table 5. Farmers' willingness to accept contracts

Variable	Cotton farmers		Tea farmers	
	Mean	Std. Dev.	Mean	Std. Dev.
Buyer's collection point	50.55	33.30	25.59	22.45
Buyer's premises	95.71	28.97	27.26	19.88
Grade A quality	78.76	59.72	24.72	4.20
Payment within 2 weeks	16.79	8.56	25.11	5.20
Payment after 2 weeks	72.66	57.62	35.51	5.51
Farmer + spouse insurance	45.05	9.90	53.60	4.58
Family funeral insurance	-12.32	1.36	49.50	6.11
Crop insurance	21.43	6.99	23.95	4.77
Farm inputs	80.36	17.37	29.32	12.86
Number of observations	505		512	

Note: The point estimates are derived from farmer-specific coefficients. The values are expressed in MWK per kg and refer to the hypothetical average price premium a farmer requires to accept a contract attribute.

- Cotton and tea farmers require a premium of about MWK 51/kg and MWK 26/kg respectively to accept contracts with delivery at a buyer's collection point.
- Farmers require higher price premia for delayed payments by more than two weeks.
- For contracts providing inputs or insurance, farmers generally require higher price premia to contract.
- Farm input provision is critical to cotton farmers.

Results cont..

Table 6. Companies' preference for contracts (% frequency)

Attributes	Cotton (n=36)	Tea (n=30)
No contract option	0	23.33
Price (>market price)	83.33	53.33
Farm gate	30.56	50
Collection point	30.56	33.33
Company premises	38.89	16.67
Grade A	75	50
Grade B	25	50
Spot payment	33.33	40
Payment within 2 weeks	33.33	36.67
Payment after 2 weeks	33.33	23.33
No benefit	25	36.67
Farmer + spouse insurance	16.67	26.67
Family funeral insurance	19.44	10
Crop insurance	16.67	16.67
Farm inputs	22.22	10

- All cotton companies prefer contracts while 23% of tea companies prefer open marketing.
- Most cotton companies prefer contracts where farmers delivered to company premises while tea companies prefer farmgate collections.
- Companies generally prefer contracting for higher quality grades at higher prices but are flexible, nonetheless.
- Companies prefer contracts providing farm inputs or insurance.
- Companies also prefer delayed payments to farmers.

Results cont..

Similarities between farmers' and companies' preferences

- Both farmers and companies prefer contract arrangements to open marketing.
- Farmers preferred higher prices and most companies are willing to offer higher prices for better quality.
- Farmers strongly prefer contracts providing inputs/insurance while most companies also prioritize this and are flexible to incorporate such benefits into their contracts, conditional on certain contract terms.

Differences between farmers' and companies' preferences

- **Payment mode:** Farmers prefer spot payments whereas companies prefer delayed payments.
- **Delivery points:** Farmers prefer to deliver either at the buyers' collection points or buyers' premises whereas companies prefer to collect from the farm gate to limit side-selling.

Conclusion and policy implications

1. Farmers and companies generally **prefer contracts to no contracts**.
2. Farmers and companies prefer **contracts providing inputs/insurance**, which cushion farmers against farm-level risks and increases yields to guarantee supplies to companies.
3. Companies are open to contracting small farmers and desire a shared information platform to guide their selection of farmers into the schemes and for farmers to recommend companies. **Stronger contract (legal) enforcement mechanisms** and **information sharing platforms** are important to promote contract farming.
4. Farmers/companies prefer to sell/buy quality products. However, companies are pessimistic about obtaining quality products while farmers are distrustful of company grading systems. **Standardized grading systems** need to be developed.
5. Companies prefer delayed payments under contracts while farmers prefer spot payments. **Advance cash payments to farmers** need to be introduced to facilitate farmer retention and minimize side-selling.
6. Designing **industry-wide contract templates** requires incorporating some of the critical attributes identified by this study, and then customizing them to individual schemes.

Working paper and policy note downloadable from: <http://massp.ifpri.info/>

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