

Association of Christian Economists
panel session on
Making Markets Work for the Rural Poor

Market Participation by Rural Households in a Low-
Income Country: An Asset-Based Approach
Applied to Mozambique

By

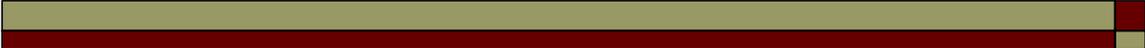
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Motivation for paper...

- Poverty reduction a major goal of development
- Recognition that agriculture is an important sector for poverty reduction in rural areas
- Market participation necessary for structural transformation from subsistence agriculture to an economy based on specialization and exchange
- A market-led paradigm of development replaced state-driven modernization from late-1970s but transformation has been slow, especially in Africa

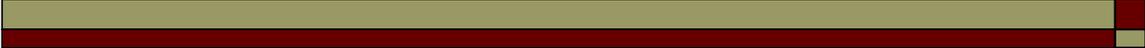
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Research gap...

- Conventional wisdom is that lack of market participation in Africa is primarily due to lack of investment in public goods (infrastructure, grades and standards, market info)
- But little attention given to the role of household asset endowments in market participation.....
- And specifically whether participation in different types of market requires different types and/or amounts of assets:
 - Spot markets versus contract
 - Quality differentiated markets

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Research hypotheses...

- Asset endowments affect output levels, gross input and output prices, transactions costs and thus participation in crop markets
- Participation in markets with potentially higher returns requires greater and more differentiated asset endowments: entry barriers lead to higher returns
- Paper develops structural and reduced form models to test for participation in three types of crop markets
 - Spot market for undifferentiated staple food
 - Contract production of undifferentiated product
 - Contract production of a quality differentiated product

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Structural model of household market participation choice...

$$\text{Max}_{M^i, s, x, A^i} U(s, x)$$

Subject to a cash budget constraint:

$$p^x x + (M^{sb} + M^{ss}) p^{s*} s = (M^{sb} + M^{ss}) p^{s*} f^s(A^s, G) + \sum_{i=1}^2 M^{ci} p^{ci} f^{ci}(A^{ci}, G) + Y$$

and an asset allocation constraint

$$A = A^s + A^{c1} + A^{c2}$$

and with the staple price determined by the household's net market position:

$$p^{s*} = p^{sm} + \tau(Z, A, G, Y) \quad \text{if } s > f^s$$

$$p^{s*} = p^{sm} - \tau(Z, A, G, Y) \quad \text{if } s < f^s$$

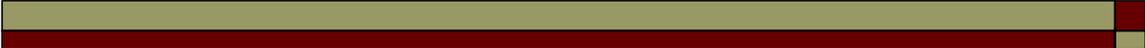
$$\text{and } p^{s*} = p^a \quad \text{if } s = f^s$$

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Empirical approach...

- Two-step Heckman Sample Selection model (Goetz, 1992):
 - Estimate Probit model of market participation with RHS variables asset endowments, access to public goods, and exclusion restrictions (non-crop income sources that could affect risk perceptions and liquidity constraints)
 - estimate OLS model of log net sales with same RHS variables (except for exclusion restrictions) and including inverse Mills ratio to control for the probability of market participation
- Non-parametric kernel regression of market participation or net sales on land holdings

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Household private assets and characteristics included in RHS

- Total land area
- Labor
- Animal traction
- Equipment (tractor, bike, radio irrigation)
- Education, age and gender of household head
- Agro-ecological zone
- Non-crop income sources (exclusion restrictions)

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Public goods and services included in RHS

- Access to information from extension
- Access to market price information
- Distance from village to nearest administrative center
- Membership of agricultural association

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First stage probit results...

Indep Variable	Maize	Cotton	Tobacco
Female Head	-	-	-
Yield loss	-	na	na
Animal Traction			+
Bike		+	
Land area	+	+	+
Land area Sq	-	-	-
Adults			+
Adults Sq			-
Distance		+	
Self Employ Y		-	+
Livestock Y	+	-	+

N	2867	1574	2346
% participation	31.2	9.6	5.6

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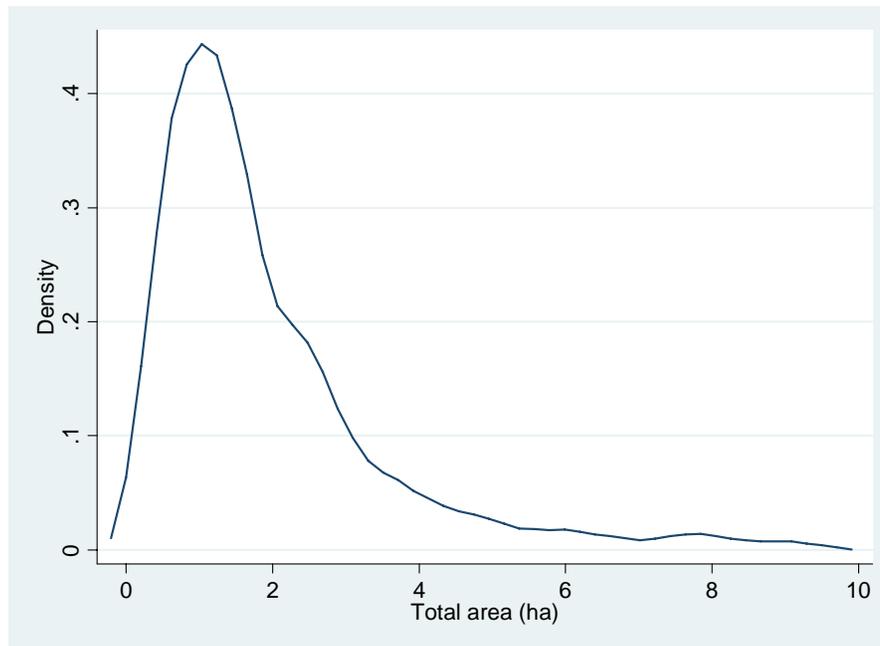
Second stage corrected OLS results..

Indep Variable	Maize	Cotton	Tobacco
Female Head	-		
Education Head		-	+
Education Sq		+	-
Animal Traction	+	+	
Bike	+	+	
Land area	+		
Land area Sq	-		
Distance		-	
Maize price	+	na	na

N	896	275	160
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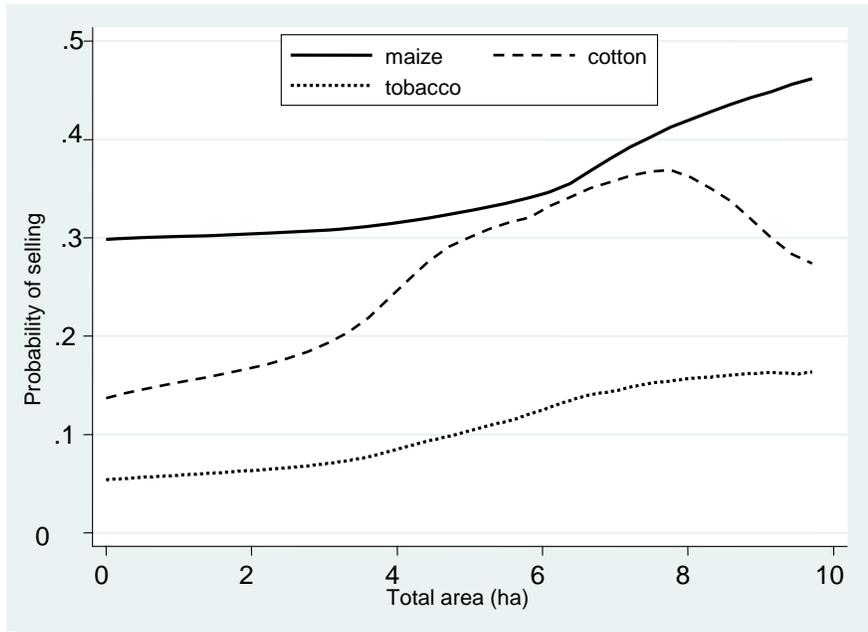
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Distribution of cultivated land area...



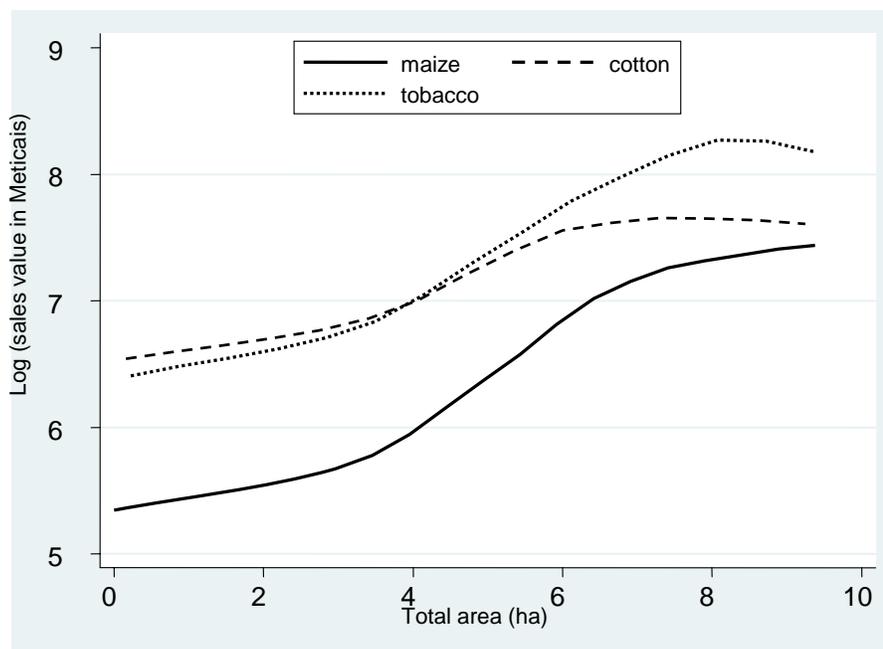
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Non-parametric results: market participation and land holdings



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Non-parametric results: log net sales and land holdings

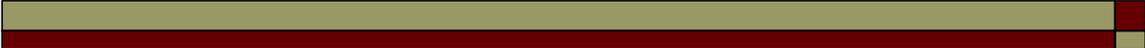


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Summary findings on crop market participation in Mozambique ...

- private household assets, especially land, positively affect participation
- Earnings increase at a sharply increasing rate in the upper tail of landholding distribution
- Access to public goods and services does not have a significant effect on participation
- Female-headed households are at significant risk of exclusion from cash crop markets

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Implications...

- Investment in public goods to facilitate market access is not a sufficient condition for agricultural transformation
- Constraints to private asset accumulation to surmount land thresholds must also be addressed (questions of targeting, social returns..)
- Different strategies will be needed for households that cannot attain asset thresholds (facilitate access to off-farm income opportunities)
- Further research needed on extent to which Mozambique findings can be generalized to other African countries