

## Appendix

Table A1: Rental market participation rates and renter characteristics, by year

year	Percentage renting-in land (tenants)	Percentage renting-out land (landlords)	Median age of tenants	Median age of non-tenants
2009	8.5%	1.1%	42	48
2011	5.7%	1.1%	43	49
2013	7.1%	1.4%	41	49
<i>Total</i>	<i>7.0%</i>	<i>1.2%</i>	<i>42</i>	<i>49</i>

Table A2: Characteristics of sample

Variable	Unit	2009/10		2011/12		2013/14	
		Mean	SD	Mean	SD	Mean	SD
Tenant	Binary	0.11	0.31	0.07	0.25	0.07	0.25
Land rented-in	Hectares	0.08	0.33	0.06	0.32	0.05	0.29
Pre-rental land	Hectares	2.23	7.39	2.51	5.16	2.81	7.26
Age of head	Years	46.9	15.3	48.8	15.2	50.8	15.3
HH size	Persons	5.5	2.9	5.8	3.1	5.7	3.1
Max. educ. attainment	Years	6.4	3.7	6.6	3.9	6.9	3.9
Female head	Binary	0.23	0.42	0.24	0.43	0.24	0.43
Number of plots	Count	2.18	1.32	2.27	1.45	2.34	1.55
Value of assets	1000s*TSh	116.8	920.8	428.4	1699.6	626.9	2549.9
Uses oxplough	Binary	0.20	0.40	0.17	0.38	0.21	0.41
Uses tractor	Binary	0.03	0.16	0.05	0.23	0.06	0.24
Fertilizer application rate	kg/ha	237	1,700	175	694	210	1,144
Is SACCO member	Share	0.05	0.22	0.07	0.26	0.05	0.23
Rec'd credit within last year	Share	0.07	0.25	0.09	0.29	0.11	0.31
Rural ward	Binary	0.86	0.35	0.84	0.37	0.83	0.37
Distance to road	Km	18.2	20.3	18.6	20.9	18.5	20.9
Distance to market	Km	74.6	50.8	74.4	51.0	74.2	50.7
Elevation	Meters	1020	505	1022	502	1022	503
Slope	Degrees	6.0	5.9	5.9	5.8	6.0	5.8
Population density	persons/km <sup>2</sup>	836	3,047	803	2,893	770	2,734
Bimodal area	Binary	0.51	0.50	0.51	0.50	0.51	0.50
Rainfall in season	Mm	799	234	801	240	813	246

Note: The slightly increasing average size of pre-rental land across successive panel waves is due to two main factors. First, a small number of households report increases in pre-rental holding sizes of greater than 10 hectares (this is 0.9% of the sample in 2011, and 0.7% in 2013.) However, none of these households rent-in land, and their inclusion in the sample does not affect estimation results reported elsewhere. Second, the survey tracks breakaway households, as described in the text, and these households in the sample contributes to a slightly larger mean pre-rental holding size in the last panel wave. Median values of pre-rental land in the sample are: 1.21 (in 2009/10), 1.29 (in 2011/12) and 1.34 (in 2013/14).

Table A3: Probabilities of renting-in for household heads of different ages

Age of household head	Probability	[95% Conf.	Interval]
20	.050***	.030	.070
30	.038***	.023	.052
40	.028***	.017	.039
50	.020***	.012	.028

*Note: This table shows post-estimation margins calculated after Probit estimation, the results of which are shown in Table 3.*

Table A4: Determinants of household credit access (probit model average partial effects)

	(1) SACCO membership	(2) SACCO membership	(3) Rec'd credit from other source	(4) Rec'd credit from other source
age of head	0.0046 (0.698)	0.0829 (0.000)***	-0.0134 (0.086)*	0.0183 (0.137)
age of head ^ 2		-0.0007 (0.000)***		-0.0003 (0.001)***
pre-rental land (ha)	0.0074 (0.179)	0.0087 (0.149)	0.0075 (0.228)	0.0079 (0.218)
household size	0.0393 (0.130)	0.0368 (0.165)	-0.0089 (0.685)	-0.0104 (0.635)
max. educ. attainment	0.0226 (0.090)*	0.0235 (0.078)*	0.0061 (0.654)	0.0063 (0.644)
female head = 1	0.1868 (0.547)	0.1799 (0.603)	0.0676 (0.786)	0.0562 (0.826)
IHS(assets)	-0.0073 (0.587)	-0.0090 (0.506)	-0.0122 (0.287)	-0.0123 (0.282)
has ox plough = 1	-0.1309 (0.373)	-0.1203 (0.409)	0.1254 (0.242)	0.1244 (0.245)
has tractor = 1	-0.0981 (0.618)	-0.0995 (0.607)	0.1841 (0.204)	0.1830 (0.206)
rural = 1	-0.3632 (0.037)**	-0.3615 (0.038)**	0.0172 (0.925)	0.0139 (0.939)
km to road	0.0063 (0.313)	0.0070 (0.275)	0.0060 (0.353)	0.0063 (0.333)
km to market	0.0008 (0.786)	0.0006 (0.837)	-0.0034 (0.337)	-0.0035 (0.317)
elevation	0.0004 (0.230)	0.0005 (0.210)	-0.0000 (0.948)	-0.0000 (0.956)
slope	0.0047 (0.827)	0.0047 (0.831)	-0.0139 (0.459)	-0.0141 (0.462)
log(population density)	0.0000 (0.442)	0.0000 (0.432)	0.0000 (0.189)	0.0000 (0.191)
bimodal rainfall = 1	0.2859 (0.489)	0.2950 (0.488)	0.0833 (0.872)	0.0989 (0.849)
mean annual rainfall	-0.0013 (0.146)	-0.0012 (0.175)	-0.0009 (0.337)	-0.0009 (0.343)
MC device?	yes	yes	yes	yes
Year dummies?	yes	yes	yes	yes
Age turning point		57.9		30.0
N	8741	8741	8741	8741

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“Transaction Costs, Land Rental Markets and Their Impact on Youth Access to Agriculture in Tanzania”

by Jacob Ricker-Gilbert and Jordan Chamberlin

Note: All models use the Probit estimator on 3 waves of data (2009, 2011, 2013), with Mundlak-Chamberlain controls (time-averages of time-varying regressors) included. Year dummies included, but coefficients not reported. P-values are cluster robust, with significance levels denoted as follows: \* =  $p < 0.10$ , \*\* =  $p < 0.05$ , \*\*\* =  $p < 0.01$ .

Table A5: Linear regression estimates of determinants of plot distance from homestead

Dependent variable= <i>IHS(plot distance)</i>	(1)	(2)	(3)	(4)	(5)	(6)
1=Plot rented-in	0.5085 (0.000)***	0.3235 (0.024)**	0.5347 (0.000)***	0.3581 (0.011)**	0.5449 (0.000)***	0.3997 (0.004)***
age of head	-0.0055 (0.000)***	-0.0056 (0.000)***	-0.0057 (0.000)***	-0.0058 (0.000)***	-0.0056 (0.000)***	-0.0057 (0.000)***
[Rented plot]*[age of head]		0.0044 (0.159)		0.0042 (0.174)		0.0034 (0.262)
# members			0.0085 (0.007)***	0.0084 (0.008)***	-0.0134 (0.178)	-0.0136 (0.173)
(max) education			0.0082 (0.003)***	0.0081 (0.004)***	-0.0034 (0.540)	-0.0035 (0.526)
female head			0.0390 (0.110)	0.0388 (0.112)	0.0315 (0.773)	0.0314 (0.773)
IHS(assets)			-0.0245 (0.000)***	-0.0245 (0.000)***	-0.0221 (0.014)**	-0.0221 (0.014)**
rural = 1			-0.4855 (0.000)***	-0.4856 (0.000)***	-0.3090 (0.004)***	-0.3078 (0.004)***
elevation			-0.0002 (0.000)***	-0.0002 (0.000)***	-0.0015 (0.001)***	-0.0015 (0.001)***
slope			-0.0002 (0.940)	-0.0001 (0.947)	-0.0131 (0.136)	-0.0131 (0.134)
log(population density)			0.0961 (0.000)***	0.0963 (0.000)***	0.0572 (0.000)***	0.0574 (0.000)***
bimodal rainfall = 1			0.1835 (0.021)**	0.1834 (0.022)**	0.6937 (0.219)	0.6899 (0.222)
mean annual rainfall			-0.0007 (0.000)***	-0.0007 (0.000)***	-0.0029 (0.000)***	-0.0029 (0.000)***
Year dummies?	no	no	yes	yes	yes	yes
Regional dummies?	no	no	yes	yes	yes	yes
MC device?	no	no	no	no	yes	yes
N	18603	18603	17740	17740	17740	17740

Note: Dependent variable is the inverse hyperbolic sine transformed distance in kilometers between plot and household. Plot-level model results shown; sample is all rented-in plots. MC device was defined at household-level, i.e. time-averages of time-varying household-level regressors. P-values are cluster robust, with significance levels denoted as follows: \* = p<0.10, \*\* = p<0.05, \*\*\* = p<0.01.

Table A6: Probit model estimates of determinants of farmer identifying a plot as being of poor quality

Dep. var. =1[poor quality plot]	(1)	(2)	(3)	(4)	(5)	(6)
1=Plot rented-in	-0.1293 (0.013)**	-0.0949 (0.592)	-0.0586 (0.296)	0.1453 (0.434)	-0.0693 (0.219)	0.1467 (0.432)
age of head	-0.0035 (0.000)***	-0.0035 (0.000)***	-0.0015 (0.051)*	-0.0013 (0.083)*	-0.0018 (0.023)**	-0.0016 (0.041)**
[Rented plot]*[age of head]		-0.0008 (0.839)		-0.0048 (0.246)		-0.0051 (0.221)
# members			0.0078 (0.043)**	0.0080 (0.039)**	-0.0074 (0.538)	-0.0072 (0.550)
(max) education			0.0029 (0.385)	0.0030 (0.367)	0.0078 (0.248)	0.0080 (0.239)
female head			-0.0455 (0.114)	-0.0452 (0.116)	-0.0845 (0.529)	-0.0842 (0.530)
IHS(assets)			0.0124 (0.039)**	0.0124 (0.038)**	0.0029 (0.744)	0.0029 (0.743)
elevation			0.0004 (0.000)***	0.0004 (0.000)***	0.0001 (0.796)	0.0001 (0.808)
slope			0.0361 (0.000)***	0.0361 (0.000)***	0.0082 (0.382)	0.0083 (0.377)
log(population density)			-0.0010 (0.913)	-0.0012 (0.894)	-0.0046 (0.653)	-0.0049 (0.631)
rural = 1			0.0500 (0.196)	0.0500 (0.196)	-0.0349 (0.756)	-0.0372 (0.741)
bimodal rainfall = 1			0.0586 (0.558)	0.0586 (0.559)	0.3314 (0.335)	0.3350 (0.328)
mean annual rainfall			0.0002 (0.018)**	0.0002 (0.019)**	-0.0005 (0.433)	-0.0005 (0.441)
Year dummies?	no	no	yes	yes	yes	yes
Regional dummies?	no	no	yes	yes	yes	yes
MC device?	no	no	no	no	yes	yes
N	18604	18604	17741	17741	17741	17741

Note: Dependent variable is equal to one if respondent reports the plot to have poor soil quality, suffer from erosion, or have a pronounced slope. Plot-level model results shown; sample is all rented-in plots. MC device was defined at household-level, i.e. time-averages of time-varying household-level regressors. P-values are cluster robust, with significance levels denoted as follows: \* = p<0.10, \*\* = p<0.05, \*\*\* = p<0.01.