Impacts of relaxing tenure and liquidity constraints on agricultural investment: Evidence from women farmers in Uganda

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World Bank Africa Gender Innovation Lab

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Motivation

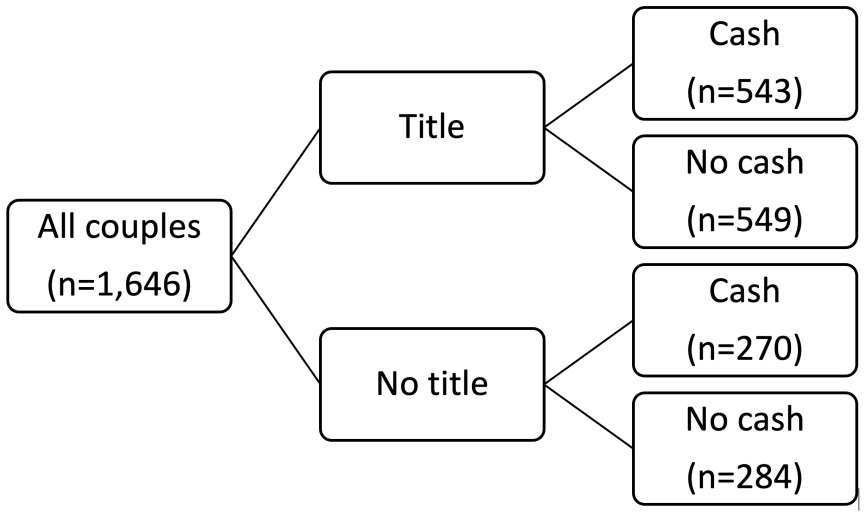
- Land titling is thought to enhance tenure security, thereby improving incentives for long-term investments in land
- We hypothesized that relaxing liquidity constraints with a large cash transfer would help farmers act on the investment incentives created by titling
- Women may be particularly liquidity-constrained in settings with unequal access to resources
- But any increased investment induced by titling can itself generate new income streams, endogenously easing liquidity constraints over time
- Whether land titling and cash grants complement or substitute each other is thus an open question

Study Context

- Smallholder farmers in Southwest Uganda, between Lakes Edward and Victoria; part of the historic Ankole kingdom
- Banyankole are historically divided into two castes: the Bahima (cattle-rearers) and the Bairu (crop growers)
- Adhere to patrilineal customs; women typically access land through marriage
- Leading producer of East African Highland bananas, locally known as *matooke* (synonymous with "food"); predominantly grown for subsistence
- Main cash crop is Robusta coffee, usually grown in the shade of matooke trees; coffee stands as Uganda's top export crop

RCT with 2x2 Factorial Design

- Sample comprises 1,646 couples from 378 villages in Mbarara, Sheema, Buhweju, and Isingiro districts (up to 5 couples per village)
- Title randomized at village level, stratified by parish
- Cash randomized at household level, stratified by village



Title Treatment

- Offered assistance to register a parcel of land under freehold tenure at no cost
- Four door-to-door visits: (i) initial offer, (ii) demarcation, (iii) adjudication, and (iv) title delivery
- If couple owned more than one parcel, offer was made for randomly selected parcel
- Costs of titling at the time up to 1,000,000 UGX (around $290) per acre
- Offer included incentives to persuade couples to add the wife's name to the title
- 70% of couples accepted the titling offer, of which 90% included the wife's name on the title
- Implemented with Ministry of Lands, Housing, and Urban Development & Associates Research Uganda

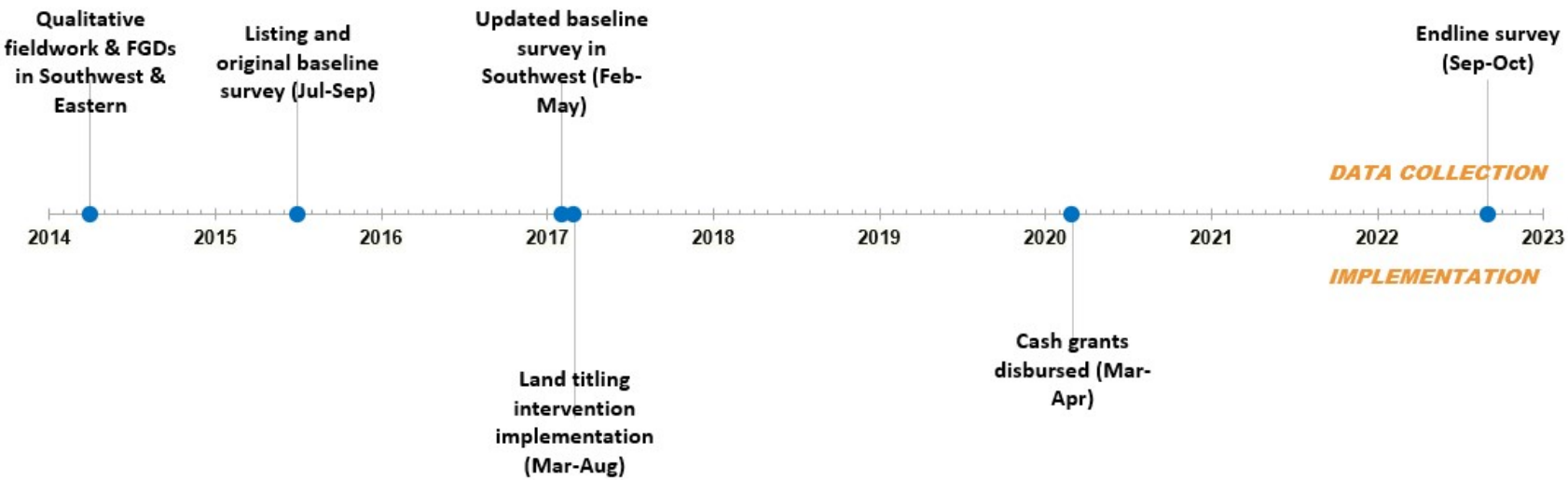
Cash Treatment

- One-off, unconditional $200 cash transfer to half of the sample households
- Targeted to the wife, branded as "Omukazi Omwekambi" or "She Invests"
- Labeled for productive investments on or off the farm
- Virtually all households accepted and collected the cash
- Implemented by Ignosi Research

Both Treatments Had an Explicit Gender Focus

- Titling treatment encouraged couples to add wife's name to title, as (co-)owners of the land; cash grant directly given to the wife
- Policy goal thus aimed not only at promoting long-term household investment but also at increasing women's bargaining power *within* the household

Study Timeline



Econometric Specification

We estimate the following specification for couple i in village v:

$$Y_{iv} = \alpha + \beta\, Title_v + \gamma\, Cash_i + \delta\,(Title_v \times Cash_i) + \lambda + Y_{0iv} + \varepsilon_{iv},$$

where λ is a parish fixed effect, Y_{0iv} is outcome measured at baseline (if available), and std errors are clustered at village level.

- β and γ measure impacts of Title and subsequent Cash treatments alone
- δ measures whether Title and subsequent Cash treatments act as substitutes ($\delta < 0$) or complements ($\delta > 0$)

Baseline Characteristics

- 83% of the couples are from the Banyakole ethnic group
- The average couple has been married for 21 years
- 18% of husbands are polygamous
- 34% own cattle
- The average couple owns 2.5 parcels of land
- The average parcel has 2.5 acres
- 53% of parcels were purchased (rather than mostly inherited)
- 71% of parcels cultivate matoke; 21% cultivate coffee

Baseline Balance: Couples' Characteristics

	(1) Banyakole	(2) Years married	(3) Polygamous	(4) Has cattle	(5) Num parcels	(6) >1 parcel
Title	0.046	0.189	0.002	0.048	-0.049	0.012
	(0.038)	(0.856)	(0.941)	(0.161)	(0.661)	(0.722)
Cash	0.027	-0.544	0.011	0.024	0.019	0.034
	(0.238)	(0.619)	(0.766)	(0.558)	(0.885)	(0.427)
Title X Cash	-0.012	-0.502	-0.017	-0.068	-0.053	-0.057
	(0.656)	(0.719)	(0.717)	(0.172)	(0.753)	(0.268)
Control group mean	0.806	21.119	0.183	0.317	2.489	0.673
Title = Cash (p-val)	0.361	0.483	0.706	0.511	0.574	0.532
Observations	1,644	1,619	1,646	1,646	1,646	1,646

p-values in parentheses

Baseline Balance: Parcel Characteristics

	(1) Acres	(2) Purchased	(3) Cropland	(4) Matoke (yes=1)	(5) Matoke (kg)	(6) Coffee (yes=1)	(7) Coffee (kg)
Title	0.607	0.042	-0.018	-0.002	353.702	0.012	8.527
	(0.036)	(0.257)	(0.489)	(0.943)	(0.199)	(0.719)	(0.176)
Cash	0.106	-0.015	-0.020	-0.017	139.587	0.001	1.184
	(0.732)	(0.749)	(0.540)	(0.661)	(0.648)	(0.971)	(0.855)
Title X Cash	-0.408	0.023	0.040	0.007	-96.118	0.006	-3.849
	(0.301)	(0.671)	(0.308)	(0.888)	(0.804)	(0.895)	(0.662)
Control group mean	2.291	0.511	0.863	0.711	1,999.075	0.257	27.267
Title = Cash (p-val)	0.084	0.154	0.945	0.672	0.453	0.748	0.293
Observations	1,646	1,646	1,646	1,646	1,631	1,646	1,633

p-values in parentheses

No Differences in Endline Attrition across Groups

	(1) Husband	(2) Wife	(3) Husb & Wife	(4) Husb or Wife
Title	-0.016	0.004	-0.022	0.010
	(0.578)	(0.869)	(0.281)	(0.753)
Cash	-0.012	-0.022	-0.015	-0.020
	(0.719)	(0.378)	(0.492)	(0.580)
Title X Cash	0.039	0.031	0.047	0.023
	(0.363)	(0.369)	(0.097)	(0.616)
Control group mean	0.197	0.155	0.088	0.264
Title = Cash (p-val)	0.902	0.334	0.716	0.367
Observations	1,646	1,646	1,646	1,646

p-values in parentheses

Impacts on Parcel Ownership

	(1) Still owns	(2) Sold	(3) Transferred	(4) Other
Title	0.068**	-0.057**	-0.009	-0.002
	(0.028)	(0.022)	(0.017)	(0.009)
Cash	0.065**	-0.041	-0.015	-0.009
	(0.031)	(0.026)	(0.019)	(0.010)
Title X Cash	-0.044	0.027	0.010	0.008
	(0.037)	(0.029)	(0.022)	(0.012)
Control group mean	0.830	0.104	0.050	0.015
Title = Cash (p-val)	0.905	0.408	0.667	0.400
Observations	1,509	1,509	1,509	1,509

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Impacts on Agricultural Outcomes

Sampled parcel

	(1) Coffee (yes=1)	(2) Matoke (yes=1)	(3) Other crops (yes=1)	(4) Fert/Pest (yes=1)	(5) Coffee (USD PPP)	(6) Matoke (USD PPP)	(7) Other crops (USD PPP)
Title	0.099***	0.004	0.039	0.081**	59.146***	-11.180	10.666
	(0.031)	(0.037)	(0.033)	(0.037)	(18.829)	(48.659)	(6.907)
Cash	0.110***	0.002	0.044	0.087**	47.690**	40.900	20.689**
	(0.038)	(0.047)	(0.043)	(0.043)	(23.073)	(64.345)	(9.267)
Title X Cash	-0.095**	-0.007	-0.027	-0.041	-72.154**	-10.403	-20.982*
	(0.048)	(0.057)	(0.052)	(0.054)	(29.941)	(78.942)	(11.425)
Control group mean	0.166	0.587	0.301	0.301	48.043	417.741	37.287
Title = Cash (p-val)	0.746	0.954	0.885	0.866	0.631	0.353	0.238
Observations	1,509	1,509	1,509	1,509	1,474	1,473	1,473

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Impacts on Wife's Decision-Making Power

	(1) Wife has say	(2) Husband has say
Title	0.055	-0.003
	(0.088)	(0.912)
Cash	0.073	-0.008
	(0.038)	(0.804)
Title X Cash	-0.047	0.047
	(0.292)	(0.227)
Title = Cash (p-val)	0.578	0.858
Control group mean	0.555	0.756
Observations	1,200	1,200

p-values in parentheses

Impacts on Wife's Property Rights Over Parcel

	(1) Owner	(2) Sell right	(3) Collateral right	(4) Decides inherit	(5) Average
Title	-0.021	0.112***	0.111**	0.047	0.062**
	(0.039)	(0.042)	(0.043)	(0.041)	(0.031)
Cash	-0.056	-0.020	0.005	-0.015	-0.021
	(0.043)	(0.045)	(0.043)	(0.046)	(0.032)
Title X Cash	0.045	0.053	0.007	0.008	0.028
	(0.054)	(0.055)	(0.053)	(0.057)	(0.041)
Title = Cash (p-val)	0.380	0.001	0.009	0.140	0.006
Control mean	0.773	0.636	0.652	0.343	0.601
Observations	1,220	1,220	1,220	1,220	1,220

Impacts on Attitudes and Beliefs

	(1) W in favor of joint titl.	(2) H in favor of joint titl.	(3) W's norm perception	(4) H's norm perception	(5) W keeps land if widow	(6) H keeps land if widower
Title	0.002	0.145***	0.055***	0.038*	0.015	0.007
	(0.035)	(0.040)	(0.019)	(0.022)	(0.044)	(0.044)
Cash	-0.042	0.062	0.017	-0.020	0.064	0.066
	(0.042)	(0.044)	(0.018)	(0.023)	(0.044)	(0.046)
Title X Cash	0.079	-0.032	-0.035	0.021	-0.054	-0.065
	(0.050)	(0.054)	(0.025)	(0.029)	(0.056)	(0.057)
Control group mean	0.813	0.541	0.384	0.413	0.646	0.632
Title = Cash (p-val)	0.235	0.047	0.043	0.003	0.252	0.167
Observations	1,200	1,199	1,200	1,199	1,200	1,199

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Conclusion

- Relaxing tenure or liquidity constraints (in isolation) increased retention of land by approx. 7 p.p., primarily through reduced (distress?) sales
- Title and cash treatments each boost likelihood of couples producing coffee by 10-11 p.p. and raise average coffee revenue by 47-59 USD PPP, with no significant difference between the two treatments
- Cash and title treatments show substitutability rather than complementarity, as indicated by the negative interaction terms of titling land and subsequently providing large transfer
- Women's decision-making power increases with either treatment, while only titling induces an increase in women's reported rights over land and couples' positive perceptions of joint titling
- Stay tuned for more analysis and results (expanding the outcome space, testing for within HH spillovers, heterogeneity, robustness, etc)!