



# Background



The four pathways through which secure property rights will improve productivity and welfare from economic theory (Besley & Ghatak, 2010)

## Limiting Expropriation Risk

## Facilitating Market Transactions

**Increases the  
incentive to invest in  
land**

**Less diversion of  
other factors**

**Gains from trade**

**Collateralization/  
credit**

**1**

**2**

**3**

**4**

# Evidence



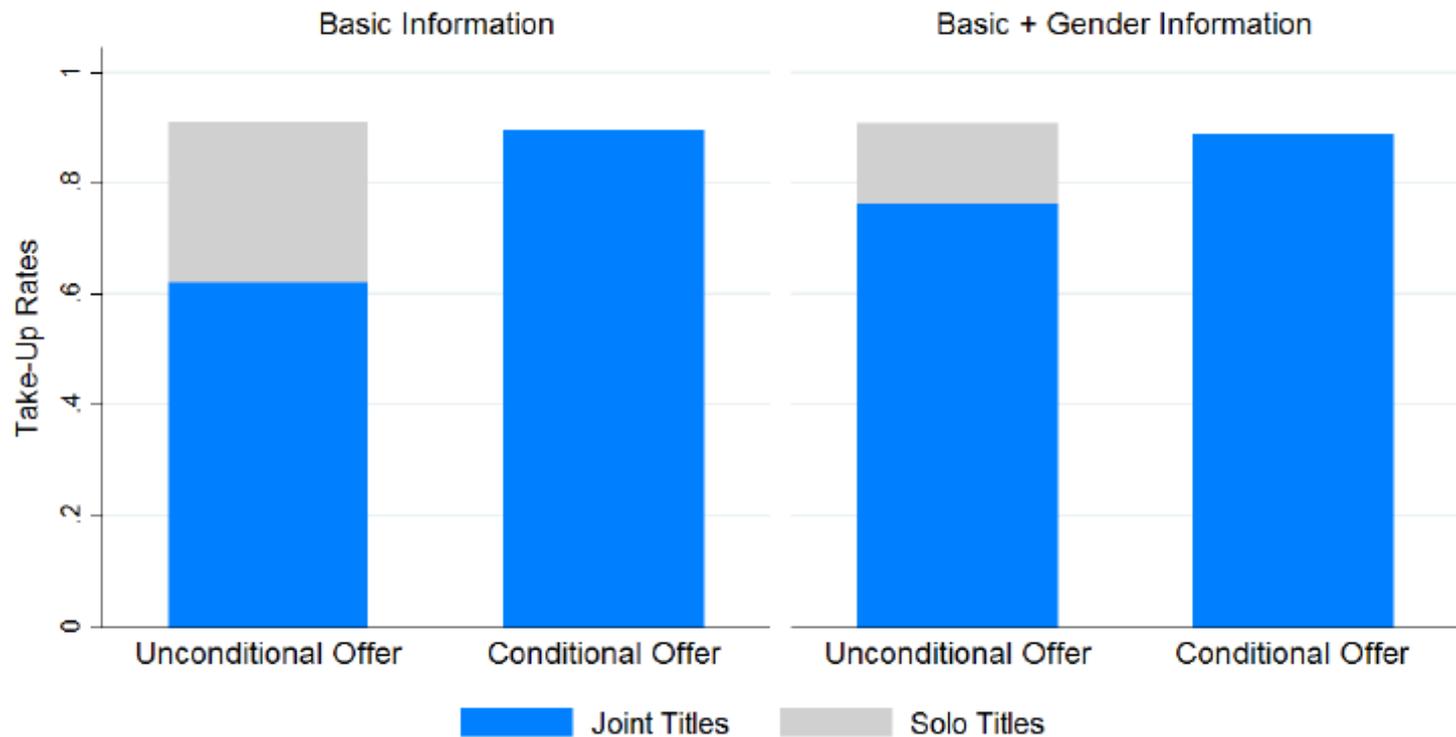
- Increased Investment
  - Increase in long-term investment (perennials) and increase in fallowing on female-managed landholdings in Benin (Goldstein et al, 2015)
  - Boosted land investment (soil conservation) in Rwanda, impact for female-headed households was nearly twice as large (Ali et al, 2014)
- Less diversion of resources
  - In Rwanda, there is a drop in farm labor, shift toward self-& wage-employment with higher incomes (Ali et al, 2017)
  - In Benin, female headed households shift guard labor to more insecure fields (Goldstein et al, 2015)
- Much weaker evidence on access to credit and land market activity
- Gender differentiated impacts to land titling interventions

# Property Rights and Women's Economic Empowerment

- Strengthening women's ownership, control and use of land matters for:
  - Unequal property rights can lead to intra-household inequality in wealth
  - Allocative inefficiencies in terms of lost economic output
  - Women's control over household resources and spending decisions, with welfare implications for this generation and the next
- In Uganda, training and transfers are used to counter concerns that land reforms could disempower women:
  - Offer different *fully-subsidized freehold title*: (i) some receive a subsidy conditional on registering the wife as a co-owner; (ii) others receive the subsidy unconditionally
  - Show different *educational videos*: (i) some receive general information about titling; (ii) others were also shown information on the benefits of female co-titling

# Property Rights and Women's Economic Empowerment

## Example: Joint land titling in Uganda



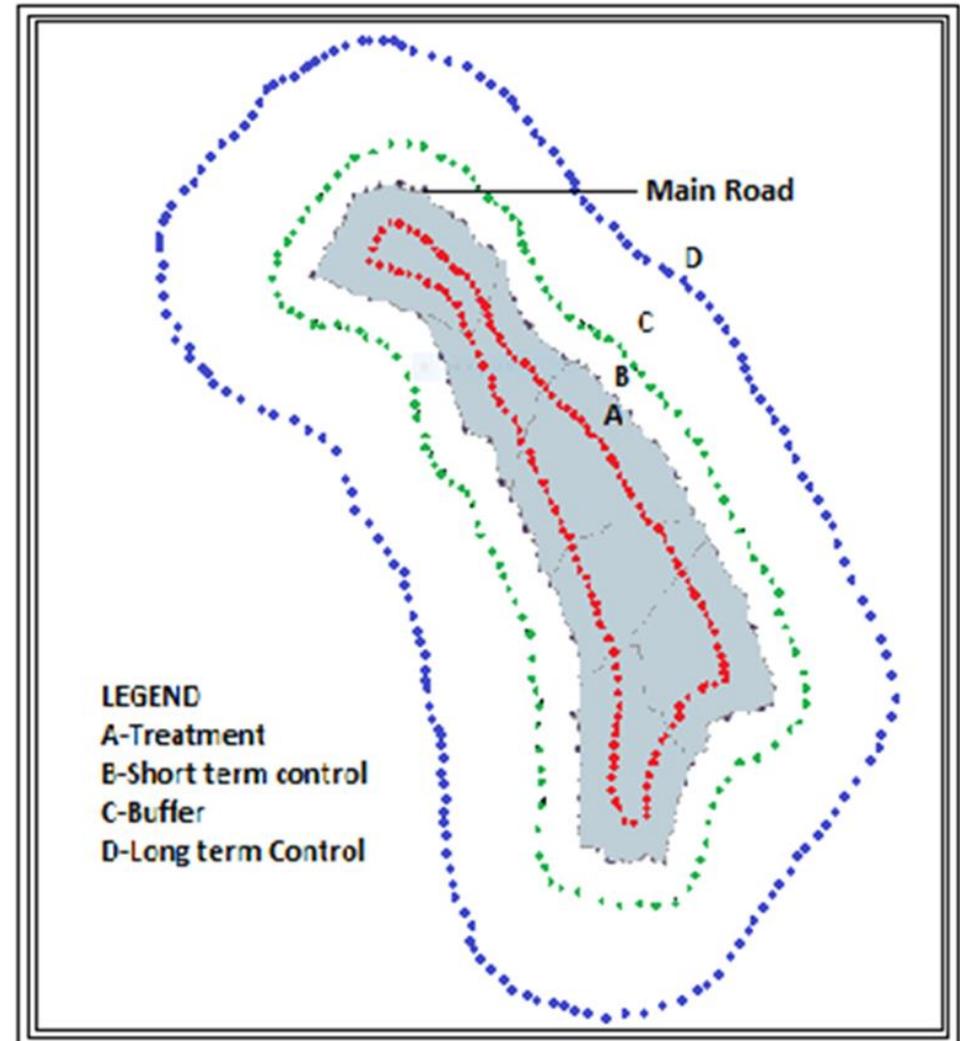
# Program



- Land Title Pilot Registration
- Designed to support the enactment of the Land Title Registration Act from 1985
- Measurement, demarcation and registration of plots in the Awutu-Effutu-Senya (Land Registration District 01)
- It was anticipated that 2,500 land title certificates will be issued out of the 3,802 existing property rights
- At the end of February 2012, 1487 titles had been issued (about 59% of the target)

# Identification

- Road delineated area to be registered
- Only plots encompassed by the road eligible to be titled under the pilot project
- Regression Discontinuity Design



# Data



- Project initiated in 2009
- Three waves of household-level panel data collected in 2010, 2011 and 2014
- Administered to households/individuals on both sides of the road in 20 communities
- In total, we have information on 1,706 households that were followed over all three survey waves
- For the analysis, we restrict the sample to households located within 200 meters from the road
- Substantial information on economic activities and plot level land use separately collected for women and men
- Spatial data using GPS locations

# Estimation

- Our aim is to estimate *intention-to-treat impacts* of the program on a wide set of outcomes using OLS
- The results show the impact of living in the pilot area (those eligible for the program) for each of the three time periods
- Where possible, regressions estimated for outcomes at the individual/plot level, for males and females separately

$$y_{ijt} = \beta X_{ij0} + \sum_{t=1}^3 (\tau_t treat_{ij} * time_t + \mu_t time_t) + \theta V_j + \varepsilon_{ijt}$$

- Where  $y_{ijt}$  is the outcome for household  $i$  in chiefdom  $j$  at time  $t$ .  $X_{ij0}$  denotes a vector of household characteristics measured at R1.  $treat_{ij}$  is a dummy for treatment.  $time_t$  is a dummy for year of survey round.  $V_j$  is a vector of chiefdom dummies
- We also estimate ‘pooled’ impacts (averaged impacts by household)

## Take-up & Land Tenure



- The probability that a plot is registered increases by 13 to 20pp for plots owned by women and 10 to 16pp for plots owned by men
- These impacts can be compared to 4.7% of plots registered at the first survey round
- The likelihood of titling land seems higher for residential and commercial plots relative to agricultural land
- Men also indicated to be significantly less worried to lose the land if it was left empty/idle, particularly when measured in the first survey round

# Results - Framework



Outcomes organized along the four theoretical predictions

## Limiting Expropriation Risk

## Facilitating Market Transactions

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# 1. Investment

## Outcomes: Land investments and chemical use

- Neither male nor female plots owners appear to have made significant investments in their agricultural land holdings in response to the program in terms of (i) fallowing, (ii) irrigation, (iii) soil improvements, or (iv) tree planting
- If anything, women were more likely to plant trees and to make soil investments (when results are pooled over all three survey rounds)
- Farmers did not increase fertilizer use
- In fact, there is a small decline in herbicide use for both male and female farmers as well as on aggregate



## 2. Allocation of Resources

### **Outcomes: Household production function**

- Overall, we see a decrease in agricultural labor on the plots in response to the program
- This is particularly true when pooling the results for households and over the three survey waves
- Decrease seems to occur at all stages of the cropping cycle (land preparation, field management, harvesting and post-harvest)
- Small decrease in agricultural production (more pronounced for female plots) – productivity is unaffected
- Shift to non-farm: increased business profits in particular for women
- The effects on business profits are sizable: more than doubling of profits for women and more than a 50% increase on household level (depending on the survey round)

## 3. Land Markets

### Outcomes: Market transactions and valuations

- Plots owned by both men and women, were more likely to be acquired through purchase by around 7pp (when impacts are pooled over all three survey periods)
- Sharecropping arrangements in particular were less common in program areas
- For both men and women, there was a decrease in (i) the number of plots held, (ii) the average size of the plot, and (iii) the total size of plots held
- These results contrast with a significant increase in the self-reported value of the plot by approx. 6,800 and 9,000 GHS for women and men respectively

## 4. Credit/Collateralization

### **Outcomes: Net asset holdings**

- Credit is not strongly impacted when looking at the pooled results
- Similar finding for lending
- However, there is a slight increase in durable goods at the individual and household level
- Other asset categories appear to remain relatively constant

# Robustness



- Institutional context: Village fixed effects
- Spatial correlation of outcome variables: Spatial Autoregressive Regression
- Spatial correlation of omitted variables: Spatial Fixed Effects
- Take up: IV approach using treatment assignment
- Attrition: Inverse probability weighting

# Conclusion



- The Ghana Land Title Registration Pilot appears to have
  - reached the target group
  - raised perceived land tenure for men
  - largely unaffected land related investment
  - led beneficiaries shift household production from farm to off-farm, in particular for women
- Considerable differences in how women and men respond to the intervention
- Still work in progress

**Thank you!**