Storage, Credit and Market Access Timing: A Randomized Evaluation of Inventory Credit

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Introduction

- How does access to credit affect product marketing choices for agricultural producers (i.e. when to sell)?
  - Is observed timing optimal given preferences or constraint-driven?

- Motivation:
  - Large Seasonal Price Fluctuations (Sahn, 1989): price going down at harvest time and then rising
  - “Selling Low” Puzzle (Barrett, 2006)

- Evaluations in Sierra Leone (palm oil):
  - T1 Community Storage (commitment+marketing support)
  - T2 Inventory Credit (T1 + credit using storage as collateral)

- No rigorous evidence on inventory credit/warehouse receipt schemes
Research Questions

▷ Do the interventions change storage adoption and inter-temporal sales decisions?
  ▷ Take-up
  ▷ **Storage and Sales** at different times of the year

▷ By generating an exogenous increase in storage, do the interventions affect:
  1. Labor hiring
  2. Production Volumes
  3. Prices at individual and village level
Background: Palm Oil in Sierra Leone

- One of the two most important crops in terms of sales
- Low storage losses (!)
- Three main seasons
  - March-June: Palm Oil Harvest Season (some off-peak production)
  - Jul-Sep: Hungry Season
  - Oct-Dec: Rice Harvest Season

- Stylized Facts
  1. Large Price Seasonality (> 50% in 6 months)
  2. Average 50% sold by end harvest season, 81% by end hungry season
  3. Large producers better able to smooth sales
Sierra Leone Inventory Credit

- Program implemented by MoA, three rural banks and IPA
- Business plan profitable (in expectation) for banks in the medium term
- Successful pilot in 2010
- 120 communities in 3 groups (village level randomization):

  T1  Community Storage: storage commitment+marketing support
      - Community to provide storage space, IPA/bank to do minimal rehabilitation

  T2  Inventory Credit (T1+credit)
      - Storage as collateral for loan worth 75% of price at harvest season
      - 3% /month interest rate

  C  Control Group
Data Collection Activities

- Intervention scheduled for March-June 2011

- Evaluation:
  - Nov-Dec 2010: Baseline Survey (ongoing):
  - July 2011: Midline Survey
  - December 2011: Endline Survey
  - March-December 2011: Sales Diaries
  - Qualitative data collection led by Sullay Kamara (CESPA-Sierra Leone)
Primary Outcomes

1 Take-up

2 Storage and Timing of Sales

- Heterogeneity by:
  - Village Level Characteristics:
    - Distance from main towns
    - Total volume of production
  - Individual Level Characteristics
    - Access to Credit
    - Wealth
    - Risk and time preferences
Program Impact on Output and Labor Hiring

Following better expected prices due to increased storage, do producers increase their:

1. Labor Hiring (household and hired labor)
2. Harvesting of Wild Palm Trees
Program Impact on Prices

How do the interventions affect

1. Village level average prices?
   - Change in supply in partially segmented markets
   - Price in given season depends on:
     - Village Treatment
     - Neighboring Villages Treatment (Kremer and Miguel 2004)
   - Counterfactuals from estimates

2. Prices received by different types of farmers?
   - Change in outside option in bargaining with buyers
   - Heterogenous treatment effect by initial outside option (e.g. baseline price received, production volume)?