A Quasi-experimental Study of a Discontinued Insurance Product in Haiti

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Motivation

• MFI infrastructure
  • Platform to deploy (group) index-insurance in settings where capital and risk market imperfections jointly bind (Karlan, Osei, Osei-Akoto, Udry, 2013)
  • Damages from extreme weather to non-farm businesses reducing ability to repay loans

• Group index-insurance
  • Averages basis risk across spatially disbursed groups
  • May reduce individual-level basis risk: groups allocate funds ex-post based on individual-level loss assessments (Clark, 2011)

• Social networks’ role in within-group allocations
  • Loss assessment by peers exploits private information not observable to the insurer
  • May be subject to collusion in settings with certain network properties

We are analyzing a hybrid index insurance product that was linked to microfinance groups in Haiti
Institutional Setting

- Hybrid “catastrophe” insurance offered by Haiti’s largest microfinance institution covering home and merchandise
  - Index-based: covered the microfinance institution against rainfall, wind and seismic shocks based on sharp parametric thresholds in geographic regions
  - Indemnity-based: covered the property (merchandise and house) of borrowers
  - Mandatory adoption by 60,000 borrowers

Payout
- Reimbursement of the client’s existing Fonkoze loan balance
- A 5,000 HTG (~US$125) cash payment
- A new loan to recapitalize their business

Total Time From Event Occurrence to Basis Risk Payout: 30-45 Days*
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MiCRO calculates and makes parametric payout
Fonkoze adjusts claims by clients
Beneficiary receives payout
MiCRO provides basis risk payout (if applicable)

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Map of MFI: 50 branches & 2,000 credit centers
Institutional Setting (cont.)

- “Ideal” loss adjustment by peers (center chiefs + group discussion)

  Elected “center chiefs” survey damage to member businesses and homes

  Specially-trained Fonkoze staff facilitate a center discussion of losses suffered to identify qualified clients

  Fonkoze staff perform audit of borderline and disputed cases to ensure accurate adjustment

  Approved claims are paid out into client deposit accounts for withdrawal at any time

  Clients who are ready receive new loan disbursement to rebuild their businesses
Objectives of Project

• The indemnity-based insurance covering borrowers was abruptly discontinued in 2012

1. What went wrong with the product and why?

2. What were the effects of the indemnity-based insurance on beneficiaries?

3. What can we learn about peer-based loss adjustment and collusion?

• Unique opportunity to investigate the failure of an integrated hybrid and microfinance-linked insurance product
  • Exploit natural variation for casual inference
  • Generate recommendations to set stage for testing potentially improved models
Variation in index across grid cell borders

- Grid cell triggered
- Cell not triggered
Credit center level variation - loan cycle thresholds

- Loan cycle almost complete
- Loan cycle recently begun

- Grid cell triggered
- Cell not triggered
What we want to do

• Survey ~2,000 borrowers
  • Business size, consumption, etc.
  • Geographic location of HHs
  • Social network module

• Use data on:
  • Claims, verifications, payouts
  • Loans, joint liability groups
  • Weather, topography

• To answer two questions:
  • What was the impact on beneficiaries?
  • Did the peer verification mechanism work better in some settings than others?
Estimating impacts on enterprises & beneficiaries

• What are the effects of post-shock transfers (loan forgiveness) on beneficiaries?

• Difference-in-difference estimation exploiting quasi-random variation
  • Centers on either side of border between a triggered vs. not triggered grid cell
  • Centers where borrowers just received a new loan when weather event occurred (large loan forgiveness) vs. centers where borrowers have nearly completed repayment on loan (small loan forgiveness)

• Outcomes
  • Business earnings, consumption
  • Migration, remittances
  • Education, mortality
  • Also moral hazard (incidence and rejection rate of claims)
Peer-based loss adjustment

• In what social settings does peer-based loss adjustment provide accurate verification?
  • Quality of information
  • Incentives for making false claims

• Outcomes:
  • Incidence of claims
  • Verification of claims
  • Probability of an audit

• Independent variables
  • Social proximity to center chief
    • Social network survey module
    • Joint liability group membership
    • Distance from center chief to borrower HH
  • Predicted damage based on weather/hurricane models + topographic maps
Data

• Survey of 2,000 beneficiaries with sampling strategy based on thresholds
  • Business size, consumption, etc. with geographic location of HH & features
  • Social network module

• Administrative data
  • Loans: Cycles; Amounts; Repayments
  • Insurance: Claims, verifications, audits; gridded parametric thresholds
  • GPS: location of branches and centers
  • Social ties: joint liability group composition
  • Mortality: life insurance data

• Existing panel (since 2004)
  • A 3-year cycling panel of 2,000 Fonkoze borrowers across 13 branches
  • Poverty score questionnaire: assets, food security, business activities, children’s schooling, etc.

• Physical data
  • Weather data; topographic data of Haiti
References


• MiCRO and Fonkoze. “First-Year Experiences with Catastrophe Insurance for Haitian Microentrepreneurs”, 2012. Available at www.munichre-foundation.org

• Tyler Tappendorf. “Evaluation of First Year Results of Fonkoze’s Kore W Natural Catastrophe Insurance for Haitian Micro-Entrepreneurs”, 2012. Available at www.fonkoze.org