UNIVERSITETET I AGDER

# Financial Linkages and Savings Groups: A comparative Analysis

Bert D'Espallier

Roy Mersland

Linda Nakato

# Agenda

1. Introduction
2. Data
3. Methodology
   - Matching
   - Difference-in-differences
4. Results
5. Conclusion

# Background

- About 1.7 billion adults remain unbanked (Global Findex report, 2017)

**Why is this?**

- Costs associated with serving the poor
- Distance from formal financial services
- Mismatch between the products offered by the FFIs and those required by the unbanked

# Background – Informal groups

- Despite this, the poor have for centuries organized themselves through informal systems
  - Systems based on mutual relationships
    - Rotating Savings and Credit Associations
    - Accumulated Savings and Credit Associations
    - Labor organizations
    - Burial societies
    - Merry-go rounds
    - **Savings Groups**

# What are savings groups (SGs)?

- SGs: Often referred to as Village Savings & Loan Associations
- A variant of the traditional ASCA
- Grass-root community-based organizations
- Composed of about 15-25 self-selected members
- Pool money in a common fund and borrow from the fund at an interest
- Donor facilitated groups: 1 million groups with 20-30 million members

# Financial Linkages

- **Forms**
  - Savings and credit
- **Reasons for linkage**
  - Saving for security reasons
  - Access to extra credit to supplement the loan fund
- **Cautionary arguments**
  - Weakening social systems that bind members together (Bouman, 1977)
  - Inhibit flexibility and adaptation potential of the groups (Bouman, 1995)
  - Disturb group dynamics (Dercon, De Weerdt, Bold & Pankhurst 2006; Aliber, 2015)

# Anecdotal Evidence


- Banking on Change Partnership (2009 – 2015)
- Egypt, Ghana, India, Kenya, Tanzania, Uganda and Zambia

# Our paper

- Increasing financial linkages
- However, little is empirically known about the implications such linkages have on the SG sustainability, performance and group dynamics.

## Key questions

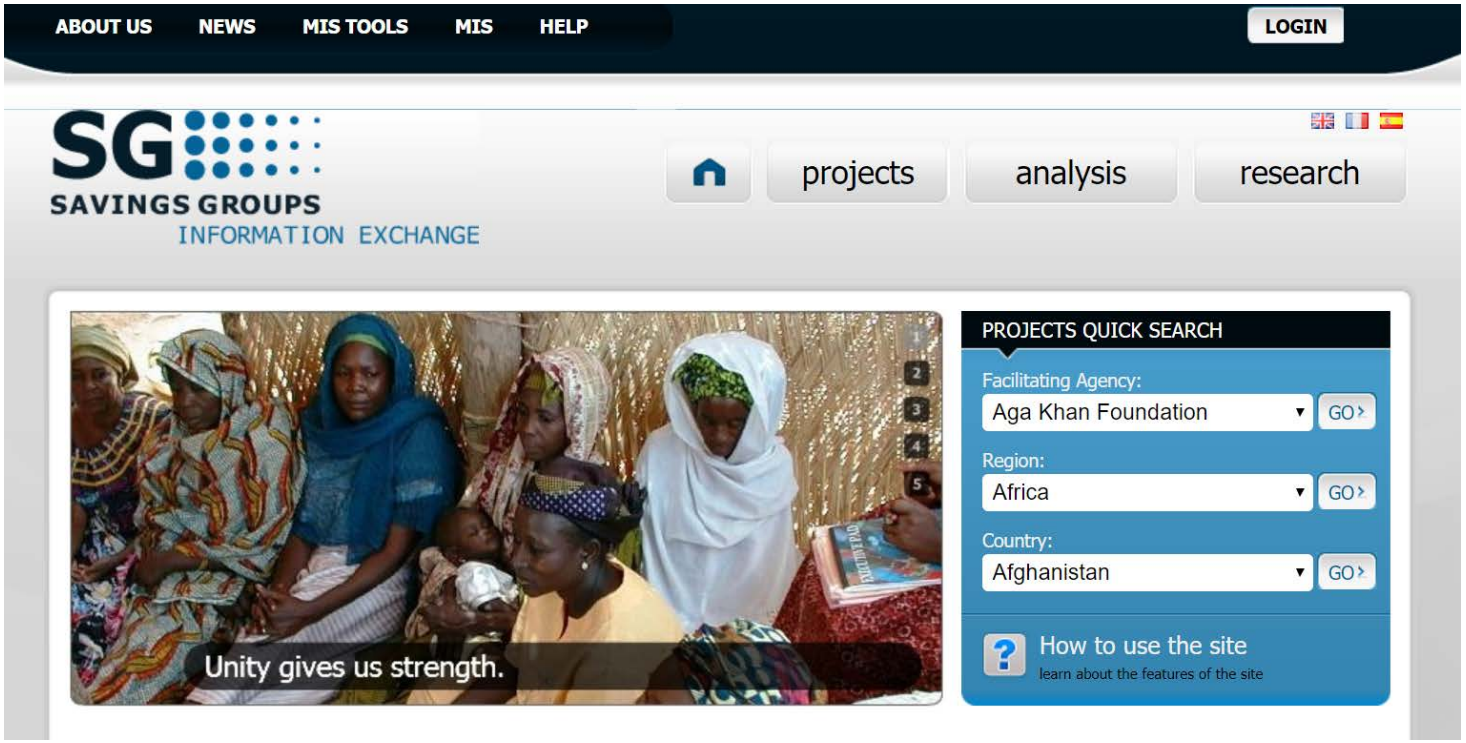
- How do financial linkages influence the dynamics of savings groups?
- Do financial linkages influence the financial performance of savings groups?

# Agenda

1. Introduction
2. Data
3. Methodology
   - Matching
   - Difference-in-differences
4. Results
5. Conclusion

# Data

- Source: SAVIX (Savings Groups Information Exchange)
  - The SAVIX is a database that reports standardized data on community-managed microfinance
  - Over 214, 000 SGs reporting to data to this platform



# Agenda

1. Introduction
2. Data
3. Methodology
   - Matching
   - Difference-in-differences
4. Results
5. Conclusion

# Methodology

- Empirical issue: Endogeneity
  - Reverse causality

    *- Linkage readiness assessment*

    *- Well performing groups eligible for linkage hence it could be that performance is causing linkage and not vice versa*
  - Traditional solution: Instrumental variable
  - Confront: Hence, construct a matched sample (a reliable counterfactual) followed by a difference-in-differences specification

# Methodology - Matching

- Nearest-neighbor matching (Mahalanobis distance)
- Match each linked group to a similar unlinked group
- Selection criteria:
  - Facilitating agency
  - Location (urban versus rural)
  - Country
  - Meeting attendance rate
  - Fund utilization rate
  - Age
  - Drop-out rate
  - Write-offs
  - Average loan per member
  - Size
  - Net value of savings
- Final sample:
  - 1190 savings groups, 19 countries, Quarterly information from 2012 to 2017
  - 4034 SG-year observations

# Comparison of treated and matched control groups

| | | Obs. | Mean | Median | Std. Dev. | p-value (diff. in means) | p-value (diff. in medians) |
|---|---|---|---|---|---|---|---|
| Panel A. Matching characteristics | | | | | | | |
| Total Assets | Linked groups | 595 | 832.34 | 689.86 | 599.63 | 0.640 | 0.817 |
| | Matched controls | 595 | 816.54 | 685.47 | 566.56 | | |
| Net savings value | Linked groups | 595 | 721.86 | 576.48 | 556.86 | 0.260 | 0.297 |
| | Matched controls | 595 | 687.23 | 543.78 | 502.15 | | |
| Attendance rate | Linked groups | 595 | 91.24 | 94.44 | 10.45 | 0.328 | 0.862 |
| | Matched controls | 595 | 91.81 | 94.74 | 9.66 | | |
| Fund utilization rate | Linked groups | 595 | 0.62 | 0.64 | 0.22 | 0.540 | 0.354 |
| | Matched controls | 595 | 0.61 | 0.62 | 0.22 | | |
| Age | Linked groups | 595 | 584.61 | 375.00 | 538.07 | 0.814 | 0.417 |
| | Matched controls | 595 | 577.30 | 343.50 | 536.33 | | |
| Write-offs | Linked groups | 595 | 0.02 | 0.00 | 0.28 | 0.340 | 0.499 |
| | Matched controls | 595 | 0.01 | 0.00 | 0.13 | | |
| Drop-out rate | Linked groups | 595 | 0.78 | 0.00 | 2.29 | 0.062 | 0.574 |
| | Matched controls | 595 | 0.55 | 0.00 | 1.92 | | |
| Average Loan per member | Linked groups | 595 | 22.68 | 17.96 | 21.14 | 0.251 | 0.246 |
| | Matched controls | 595 | 21.48 | 17.05 | 20.10 | | |

# Comparison of treated and matched control groups

| | | Obs. | Mean | Median | Std. Dev. | p-value (diff. in means) | p-value (diff. in medians) |
|---|---|---|---|---|---|---|---|
| Panel B. Other characteristics | | | | | | | |
| Number of loans outstanding | Linked groups | 595 | 13.84 | 14.00 | 5.92 | 0.546 | 0.772 |
| | Matched controls | 595 | 14.04 | 14.00 | 5.82 | | |
| Value of loans outstanding | Linked groups | 595 | 555.21 | 450.30 | 454.64 | 0.551 | 0.817 |
| | Matched controls | 595 | 540.03 | 446.58 | 422.45 | | |
| Women percent | Linked groups | 595 | 80.16 | 84.00 | 18.92 | 0.127 | 0.082 |
| | Matched controls | 595 | 78.50 | 81.67 | 18.63 | | |
| Cash in other funds | Linked groups | 595 | 33.97 | 22.27 | 38.15 | 0.326 | 0.954 |
| | Matched controls | 595 | 30.91 | 22.48 | 36.24 | | |

- From the t-tests and difference in median tests, we can see that the linked firms are very similar to the unlinked firms and hence they provide reliable counterfactuals of how the linked groups would have behaved if they had not been linked

# Methodology: Difference-in-differences specification

- Define treatment:
  - Financial linkage
- "Treated" groups:
  - Those that are linked to a formal financial institution
- "Control" groups:
  - Those that are not linked to a formal financial institution

# Methodology: Difference-in-differences specification

- Estimated model:

$$y_{it} = \alpha_i + \alpha_t + \alpha_f \times \alpha_t + \alpha_c \times \alpha_t + \delta X_{it} + \beta Financial\ Linkage_{it} + \varepsilon_{it}$$

  - $y_{it}$: Group level outcomes
  - $\alpha_i$: Savings Groups fixed effects
  - $\alpha_t$: Time fixed effects
  - $\alpha_f \times \alpha_t$: Agency-time fixed effects
  - $\alpha_c \times \alpha_t$: Country-time fixed effects
  - $\delta X$: SG specific controls (age and size)
  - $Financial\ Linkage$: Dummy variable =1 for linked groups
  - $\varepsilon_{it}$: error term (standard errors clustered at group level)

# Agenda

1. Introduction
2. Data
3. Methodology
   - Matching
   - Difference-in-differences
4. Results
5. Conclusion

# Financial linkages and group dynamics

| VARIABLES | (1)<br>Drop-out rate | (2)<br>Attendance rate | (3)<br>Women perc |
|---|---|---|---|
| Financial Linkage | 0.516*** | -0.765 | -0.00779 |
| | (0.195) | (0.551) | (0.489) |
| Age | -0.00137 | -0.00931* | 0.00344 |
| | (0.00101) | (0.00504) | (0.00406) |
| Ln_Assets | 0.102** | -0.806*** | -0.143 |
| | (0.0506) | (0.194) | (0.168) |
| Constant | -3.221 | 127.1*** | 57.53*** |
| | (1.994) | (7.690) | (7.925) |
| Quarter fixed effects | Yes | Yes | Yes |
| Agency-quarter fixed effects | Yes | Yes | Yes |
| Country-quarter fixed effects | Yes | Yes | Yes |
| Observations | 4,034 | 4,034 | 4,034 |
| R-squared | 0.021 | 0.043 | 0.030 |
| Number of SGs | 1,190 | 1,190 | 1,190 |

# Nature of linkage and group dynamics

| VARIABLES | (1)<br>Drop-out rate | (2)<br>Attendance rate | (3)<br>Women_perc |
|---|---|---|---|
| Financial Linkage*Credit | 1.227 | -2.701 | -0.597 |
| | (0.750) | (2.101) | (1.545) |
| Financial Linkage*Savings | 0.448** | -0.547 | 0.0420 |
| | (0.199) | (0.543) | (0.498) |
| Financial Linkage*Both | 0.662** | -3.268 | 0.271 |
| | (0.334) | (2.671) | (1.312) |
| Age | -0.00133 | -0.00939* | 0.00340 |
| | (0.000997) | (0.00505) | (0.00404) |
| Ln_Assets | 0.0985* | -0.796*** | -0.140 |
| | (0.0512) | (0.193) | (0.169) |
| Constant | -3.336* | 127.4*** | 57.62*** |
| | (2.018) | (7.667) | (7.844) |
| Quarter fixed effects | Yes | Yes | Yes |
| Agency-quarter fixed effects | Yes | Yes | Yes |
| Country-quarter fixed effects | Yes | Yes | Yes |
| Observations | 4,034 | 4,034 | 4,034 |
| R-squared | 0.022 | 0.044 | 0.030 |
| Number of SGs | 1,190 | 1,190 | 1,190 |

# Financial linkages and group performance

| VARIABLES | (1)<br>Savings per member | (2)<br>Fund utilization rate | (3)<br>ROS |
|---|---|---|---|
| Financial Linkage | 2.205** | 0.0716*** | 0.535* |
| | (1.096) | (0.0155) | (0.283) |
| Age | 0.00140 | 0.000320*** | -9.91e-05 |
| | (0.00688) | (9.24e-05) | (0.000924) |
| Ln_Assets | 11.54*** | 0.150*** | 0.131** |
| | (0.553) | (0.00592) | (0.0604) |
| Time fixed effects | Yes | Yes | Yes |
| Agency-time fixed effects | Yes | Yes | Yes |
| Country-time fixed effects | Yes | Yes | Yes |
| Constant | -65.52*** | -0.539*** | -3.498* |
| | (12.63) | (0.195) | (1.973) |
| Observations | 4,034 | 4,034 | 4,028 |
| R-squared | 0.411 | 0.302 | 0.014 |
| Number of SGs | 1,190 | 1,190 | 1,190 |

# Nature of linkage and group performance

| VARIABLES | (1) Savings per member | (2) Fund utilization rate | (3) ROS |
|---|---|---|---|
| Financial Linkage*credit | -5.177** | 0.0802 | 0.259 |
| | (2.323) | (0.0496) | (0.621) |
| Financial Linkage*Savings | 2.719** | 0.0713*** | 0.583** |
| | (1.144) | (0.0160) | (0.279) |
| Financial Linkage*Both | 12.52** | 0.0417 | -0.969 |
| | (5.761) | (0.0578) | (0.626) |
| Time fixed effects | Yes | Yes | Yes |
| Agency-time fixed effects | Yes | Yes | Yes |
| Country-time fixed effects | Yes | Yes | Yes |
| Age | 0.000858 | 0.000320*** | -9.74e-05 |
| | (0.00691) | (9.23e-05) | (0.000923) |
| Ln_Assets | 11.57*** | 0.149*** | 0.133** |
| | (0.554) | (0.00593) | (0.0598) |
| Constant | -64.39*** | -0.540*** | -3.437* |
| | (12.73) | (0.195) | (2.013) |
| Observations | 4,034 | 4,034 | 4,028 |
| R-squared | 0.413 | 0.302 | 0.014 |
| Number of SGs | 1,190 | 1,190 | 1,190 |

# Agenda

1. Introduction
2. Data
3. Methodology
   - Matching
   - Difference-in-differences
4. Results
5. Conclusion

# Conclusion

- Savings linkage leads to minimal group disruption
  - Increase in drop-out rate
- Savings linkage leads to enhanced group performance
  - Increase in member savings, fund utilization rate and Return on Savings
- Credit linkage is associated with stability in group dynamics.
- Credit linkage leads to reduction in group performance
  - Reduction in member savings

Thank you