Scaling an innovative credit product for smallholders across contexts

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Evidence from a Randomised Evaluation in Kenya

Low adoption of agricultural technologies

- Recent development of new agricultural technologies with potential to contribute to economic growth and poverty alleviation
- Credit constraints prevent many small holder farmers from investing in new technology
  - Sizeable initial deposit or a guarantor is often required to receive a loan, restricting access for most

- In developed countries, asset collateralized loans for purchase of houses, vehicles, and small business equipment are common
  - In event of loan default, asset is repossessed by bank
  - Using assets as collateral is rare in developing countries, where credible and efficient processes to seize collateral may be lacking

- For certain products, can asset collateralization expand farmer access to credit without affecting repayment rates?
Can innovative financing help farmers access water tank loans?

- The asset: Water tanks are a big outlay (~$350) but might be affordable if can pay gradually.
  - Water tanks make good collateral:
    - Hard to hide and hard for the farmer to move
    - Easy for the cooperative to repossess
    - Maintain their value and can be resold

- Study context:
  - Kenya’s Central and Rift Valley provinces
  - Many farmers already involved in SACCOs

- Study population: Smallholder dairy farmers
  - Farmers were members of SACCOs, selling milk to local dairy cooperatives
  - Average herd size of 2 cows
Innovative financing

- Researchers partnered with Nyala Dairy Cooperative to offer smallholder dairy farmers a loan to purchase a 5,000-liter rainwater harvesting tank.
- Water tanks offered to farmers through an innovative credit contract:
  - The tank itself is used as a collateral
  - Repayments are automatically deducted from monthly milk sales at the cooperative
  - Term: 24 months; managed by the SACCO
  - If farmers failed to repay, the cooperative would repossess the tank and sell it to cover the outstanding loan obligation
- Researchers also compared this asset collateralized loan contract to other “standard” loan contracts, including one that was fully cash-collateralized by the farmer’s own deposits and guarantors.
## Treatment Groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Deposit</th>
<th>Guarantors</th>
<th>Asset Collateral</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status quo</td>
<td>33%</td>
<td>100%</td>
<td>None</td>
</tr>
<tr>
<td>Asset collateral - low</td>
<td>25%</td>
<td>None</td>
<td>Tank</td>
</tr>
<tr>
<td>Joint liability</td>
<td>4%</td>
<td>21%</td>
<td>Tank</td>
</tr>
<tr>
<td>Asset collateral - high</td>
<td>4%</td>
<td>None</td>
<td>Tank</td>
</tr>
</tbody>
</table>
## Results

<table>
<thead>
<tr>
<th>Group</th>
<th>Deposit</th>
<th>Guarantors</th>
<th>Asset Collateral</th>
<th>Take-up</th>
<th>Repossession Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status quo</td>
<td>33%</td>
<td>100%</td>
<td>None</td>
<td>2.4%</td>
<td>0%</td>
</tr>
<tr>
<td>Asset collateral - low</td>
<td>25%</td>
<td>None</td>
<td>Tank</td>
<td>27.6%</td>
<td>0%</td>
</tr>
<tr>
<td>Joint liability</td>
<td>4%</td>
<td>21%</td>
<td>Tank</td>
<td>23.5%</td>
<td>0%</td>
</tr>
<tr>
<td>Asset collateral - high</td>
<td>4%</td>
<td>None</td>
<td>Tank</td>
<td>44.3%</td>
<td>0.7%</td>
</tr>
</tbody>
</table>
Loan Take-up

Take-up rates are overall rates taking into consideration the original sample and the out of sample offers.

And had real effects

- **Real impacts** on household water access, time saving, and girls’ school enrolment

<table>
<thead>
<tr>
<th></th>
<th>Likelihood of owning any tank</th>
<th>Minutes/day fetching water</th>
<th>Enrolment rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>+17.5pp 45%</td>
<td>-3.17 8</td>
<td>+4pp 98.4%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-9.66</td>
<td></td>
</tr>
</tbody>
</table>
Discussion

- Asset collateralization has the potential to expand access to credit.
- However, there may be a minimum level of deposit required.
- The SACCO continued the asset-collateralized loans, but chose the option of 75% collateral and added an appraisal fee of 700 ksh.

Broader Lesson

- The profit maximizing lender will set borrowing rates too high.
- Government cap on interest rates compounds the problem.
- Innovative financing can help solve this.
Applying the idea in Rwanda

Emily Cupito
J-PAL Africa
Globally Informed
Locally Grounded
Takeaways from context scoping

**Reasons why the project might work**
- Lots of dairy farmers with the same number of cows on average
- Water storage is a problem
- Institutional partners willing to participate, i.e. dairy cooperatives, their cooling centres, and SACCOs
- Availability of lightweight durable plastic tanks

**Reasons it might not work**
- Dairy cooperatives and SACCOs are separate entities
- Tanks new idea for individuals
- Tanks are more expensive than in Kenya

Solution: Test the process and monitor take up and repayments.
Phase I: Intense support

- Small pilot in 1 sector, with intense support
- 43 farmers took the loans (about 25% of those eligible)
- Repayments went moderately well
  - 1 farmer defaulted but repossession and tank re-sale went smoothly
  - 40% of farmers have been late at least by 1 month
Phase II: Workshops for SACCOs

• 53 SACCOs attended the workshops
• 13 SACCOs have signed a contract with a tank company
• 6 SACCOs actively offering loans
  • 93 additional tanks sold so far
Another Water Tank Loan Project in Rwanda

- Rwanda Natural Resources Authority offered asset-collateralized water tank loans

### Loan Option Ubudehe Category

<table>
<thead>
<tr>
<th>Loan Option</th>
<th>Ubudehe Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loan Only</td>
<td>5th (middle), 6th (well off)</td>
</tr>
<tr>
<td>Loan + Subsidy</td>
<td>4th (surviving), 3rd (poor)</td>
</tr>
<tr>
<td>Low-cost artisan tanks</td>
<td>2nd (poorer), 1st (poorest)</td>
</tr>
</tbody>
</table>

- About 5,000 tank loans provided (loan and loan + subsidy) as of Dec 2016
Thank You!