Active learning fosters financial behavior: Experimental evidence from rural Uganda

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ABSTRACT

We conduct a randomized field experiment to study the effects of two financial education interventions offered to small-scale retailers in Western Uganda. The treatments contrast “active learning” with “traditional lecturing” within standardized lesson plans. We find that active learning has a positive and economically meaningful impact on savings and investment outcomes, in contrast to insignificant impacts of lecturing. These results are not conditional on prior education or financial literacy. Tentative evidence suggests that only active learning stimulates several cognitive and non-cognitive mechanisms; moreover, a social mechanism may be at play as treated individuals join social groups discussing financial matters.

STATE OF THE LITERATURE

Evidence from recent experiments suggests that intervention-impacts may be higher when financial education (FE) is (a) offered at a teachable moment (Miller et al., 2015, Kaiser & Menkhoff 2017), (b) simplified (rules of thumb) (Breder et al., 2014, Skimmern et al. 2016), (c) personalized (Carpena et al., 2015), (d) convenient and entertaining (Berg and Zia 2017).

→ What about differences in teaching methods?

RESEARCH DESIGN

- Pre-registered randomized trial (RCT) at AEA RCT registry
- Cluster-RCT with 1,295 small-scale retailers in 83 ‘clusters’ in Western Uganda
- Random assignment of two different financial education treatments at the cluster-level (balanced at baseline)
- Measurement of field behaviors and financial outcomes 6 months after treatment (short-term effects)
- NOSE: 0.15-0.50 units at 80% Power (at α = 0.05)
- Attrition-rate: 9.9%

Study region

The FL programs

- Two standardized FL programs
- Both trainings cover four topic areas: (i) budgeting, (ii) savings, (iii) loans, (iv) investment, (v) financial service providers
- Intensity for both: 120 minutes
- Same teachers (variable by Central Bank of Uganda)
- Same class-size (15-16 students per class)
- What differs is the teaching method:
  - Treatment A: Active learning
  - Treatment B: Traditional lecturing
  - Five stations covering the topic areas
  - Use of visuals, a narrative, and games
  - Constructivist

Timeline and empirical strategy

**ANCOVA model to estimate (intention-to-treat) treatment effects for the two treatments $A_i$ and $B_i$ (standard errors are clustered at the market-level to account for the level of randomization):**

$$Y_{ijc} = \alpha + \beta A_i + \gamma B_i + \delta C + \epsilon_{ijc}$$

$Y_{ijc}$ measure of financial behavior for individual $i$ in cluster $c$ at the time of follow-up (3) $\gamma$ = logit value of the outcome at baseline and $B_i$ and $C$ are district-level fixed-effects, $\epsilon_{ijc}$ denotes the error term.

Results on indices of outcomes: $Y_j = \frac{Y_j - \mu_j}{\sigma_j}$ with $\mu_j$ denoting the mean of $Y_j$ for the control group (C) and $\sigma_j$ denoting the standard deviation of $Y_j$ for the control group. The aggregate index then takes the following form:

$$Y_{j} = \frac{\bar{Y}_j}{\sigma_j}$$

Finaly we standardize the outcome index ($Y$) to have a mean of zero and standard deviation of one for the control group.

RESULTS

**Economic significance**

Savings after 6 months

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Savings index (PPP 2016)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>0.87 (0.95)</td>
</tr>
<tr>
<td>Treatment A</td>
<td>1.36 (0.65)</td>
</tr>
</tbody>
</table>

$21.1\%$ of the control group have any savings Active learning: $+3.8$ pp (i.e. $91.6\%$) Lecracing: $+2.7$ pp (i.e. $90.5\%$)

Intensive margin

The control group has total savings of $480 \, \text{S} \, \text{PPP 2016}$ Active learning: $+102 \, \text{S}$ (i.e. $58 \, \text{S}$) Lecracing: $+30 \, \text{S}$ (i.e. $450 \, \text{S}$)

The control group has net savings of $355 \, \text{S} \, \text{PPP 2016}$ Active learning: $+136 \, \text{S}$ (i.e. $495 \, \text{S}$) Lecracing: $+13 \, \text{S}$ (i.e. $342 \, \text{S}$)

Investments after 6 months

Total productive investment:

The control group has made total investments of $281 \, \text{S} \, \text{PPP 2016}$ Active learning: $+94 \, \text{S}$ (i.e. $365 \, \text{S}$) Lecracing: $+39 \, \text{S}$ (i.e. $320 \, \text{S}$)

Business formalization:

$23.2\%$ of the control group have formally registered their business with authorities Active learning: $+7.7$ pp (i.e. $30.9\%$) Lecracing: $+6$ pp (i.e. $29.2\%$)

Total durable assets:

Mean number of assets in the control group: $51.18$: Active learning: $+5.41$ (i.e. $56.59$) Lecracing: $+2.23$ (i.e. $53.6$)

$32.6\%$

**POTENTIAL SOCIAL MECANISMS**

**POTENTIAL COGNITIVE AND NON-COGNITIVE MEDIATORS**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Cognitive and non-cognitive mediators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>$+$</td>
</tr>
<tr>
<td>Treatment A</td>
<td>$+$</td>
</tr>
</tbody>
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**SELECTED REFERENCES**