The Macroeconomics of Microfinance

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Microfinance Revolution

- Small loans, targeted to the poor
- Low default rates: 2.06 – 3.54% (median)
- High growth rates, desire to scale up even more...
- Many recent micro studies ... but no evaluation of macroeconomic considerations
Microfinance narrative

- People face high returns to entrepreneurship, credit constraints
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- Microcredit used for productive activities
Microfinance narrative

- People face high returns to entrepreneurship, credit constraints
- Microcredit used for productive activities
- Induces business investment, input use, profits, and entrepreneurship
Flurry of Recent Microevaluations

- India (Banerjee, Duflo, Glennerster, Kinnan, 2011)
- Mongolia (Attanasio et al, 2011)
- Morocco (Crepon, Devoto, Duflo, Pariente, 2011)
- Philippines (Karlan and Zinman, 2011)
- Thailand (Kaboski and Townsend, 2011, 2012)
- More India (Field, Pande, Papp, Rigol, 2011)
- East Africa (Greaney, Kaboski, Van Leemput, 2012)

What we’ve learned:
Flurry of Recent Microevaluations

- India (Banerjee, Duflo, Glennerster, Kinnan, 2011)
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What we’ve learned:

- Mixed evidence on narratives
- Impacts vary (by household type)
- Impacts vary (by program details! environment?)
Potential macroeconomic impacts?

Macroeconomic development question is probably the most important:

- Big question: How do we make the next 50 years in Uganda look like the past 50 in Korea?
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  - How do we understand global poverty? our challenge?
  - Most people in the world who are poor are poor because of the country (i.e., macroeconomy) they live in
  - Not likely an issue of targeting “services” to populations like a global HHS
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• Narrow question: Could microfinance contribute, or is it negligible?
• Are macroeconomic forces important for understanding these questions?
## Aggregate Importance of Microfinance (2008)

<table>
<thead>
<tr>
<th>Country</th>
<th>Borrowers per-capita</th>
<th>MF Loans /GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>0.13</td>
<td>0.028</td>
</tr>
<tr>
<td>Mongolia</td>
<td>0.13</td>
<td>0.129</td>
</tr>
<tr>
<td>Peru</td>
<td>0.11</td>
<td>0.041</td>
</tr>
<tr>
<td>Bolivia</td>
<td>0.09</td>
<td>0.107</td>
</tr>
<tr>
<td>Vietnam</td>
<td>0.09</td>
<td>0.044</td>
</tr>
<tr>
<td>Kenya</td>
<td>0.04</td>
<td>0.036</td>
</tr>
<tr>
<td>India</td>
<td>0.02</td>
<td>0.003</td>
</tr>
<tr>
<td>Mean</td>
<td>0.02</td>
<td>0.004</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.03</td>
<td>0.020</td>
</tr>
</tbody>
</table>
Tough to make progress

- Can’t run long-run, macroeconomic experiments
- Cross-country identification is difficult
- But don’t let methodological rigidness limit the questions we ask
Alternative: Quantitative macro theory

Our strategy:

1. Write down model capturing key mechanisms motivated by data
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4. Evaluate quantitative macroeconomic importance and macroeconomic mechanisms
5. Feedback: Could new micro studies better discipline macro models?
1. Broad financial frictions impede development (BKS, AER, 2011)
   - TFP, output ↓ substantially
   - Distortion of entry to large-scale sectors is important
Our Findings

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2. Wide-scale microfinance: (BKS, wp, 2012)
   - TFP ↑
   - capital ↓
   - per-capita income ≈ 0
   - increases wages, redistributing from “rich” to “poor” (marginal entrepreneurs and workers)
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     (marginal entrepreneurs and workers)

3. Important GE effects: more redistribution but smaller aggregate impact
Benchmark Model: BKS, 2011

- Heterogeneous agents: entrepreneurial ability and wealth.
- Occupational choice: Work for wage or operate their own diminishing returns to scale technology.
- Financial friction: limited enforcement.
entrepreneur (k,l) produce consume/save

(assets: a, ability: z)

occupational choice (each period)

worker produce consume/save

(a',z) (a', z'~μ(z'))

1-γ

γ

1-γ

γ

(a', z'~μ(z'))
Model Timeline

- entrepreneur \((k, l)\)
- produce, repay/default, consume/save
- worker
- produce, consume/save
- occupational choice (each period)
- borrow (assets: a, ability: z)

The diagram illustrates the timeline and decision-making process for entrepreneurs and workers, including borrowing, occupational choice, and production and consumption activities.
Model Timeline

- Entrepreneur
  - Borrow
    - (assets: a, ability: z)
  - Produce
    - Repay
    - Consume/save
  - Occupational choice (each period)

- Worker
  - Produce
  - Consume/save

\[
k \leq \bar{k}(a, z; \phi)
\]
entrepreneur

\[ k \leq \bar{k}(a, z; \phi) \]

\[ c + a' = z k^\alpha l^\beta - R k - w l \]
\[ + (1 + r) a \]

(assets: a, ability: z)

occupational choice (each period)

worker

\[ c + a' = w + (1 + r) a \]

(a', z)

\( \gamma \)

(a', z ~ \mu(z'))

1-\( \gamma \)

(a', z)

1-\( \gamma \)

(a', z ~ \mu(z'))
Financial Friction: General Equilibrium

Gain rich low ability entrepreneurs

Lose poor marginal entrepreneurs

log(a) (Wealth)

log(z) (Entrepreneurial Ability)
Determining Quantitative Importance

Joint distribution of ability and wealth
entrepreneur

\[ k \leq \tilde{k}(a, z; \phi) \]

(assets: a, ability: z)

occupational choice (each period)

worker

produce consume/save

produce consume/save

(a', z)

(a', z'~\mu(z'))

(1-\gamma)

1-\gamma

\gamma

1-\gamma

\gamma

(1-\gamma)

(a', z'~\mu(z'))
Can Microfinance Undo these Frictions?

entrepreneur

$$k \leq \max \left\{ \frac{k(a, z; \phi)}{a + b_{MF}} \right\}$$

(assets: a, ability: z)

occupational choice (each period)

worker

produce
consuming/save

Add option of microfinance loan

(a', z)

1-\gamma

\gamma

(\text{a', z}' \sim \mu(z'))
Rental Limit, \( b^{MF} = 0.5w \)
Occupational Choice

log(a) (Wealth) vs log(z) (Entrepreneurial Ability)

z_{90}, z_{95}, z_{99}, z_{max}
Impact on Occupational Choice, $b^{MF} = 0.5w$
Impact on Occupational Choice, $b^{MF} = 1.5w$
Comparing PE with Microevaluations
Comparing PE with Microevaluations

<table>
<thead>
<tr>
<th></th>
<th>Model</th>
<th>India</th>
<th>Thailand</th>
</tr>
</thead>
<tbody>
<tr>
<td>$b^{MF} = 1.5w$</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max Loan/Exp per Cap</td>
<td>1</td>
<td>1–2</td>
<td>1</td>
</tr>
<tr>
<td>Credit/Exp per Cap</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Microfinance/Total Credit</td>
<td>29%</td>
<td>44%</td>
<td>33%</td>
</tr>
<tr>
<td>Entrepreneurship</td>
<td>+4 pp</td>
<td>+2 pp</td>
<td>+1 pp</td>
</tr>
<tr>
<td>Investment</td>
<td>+46%</td>
<td>+16/128%</td>
<td>+35% (prob.)</td>
</tr>
<tr>
<td>Consumption</td>
<td>+1%</td>
<td>+16%</td>
<td>+15%</td>
</tr>
</tbody>
</table>
Direct Impact of Microfinance, $b^{MF} = 1.5w$
Aggregate Impact
Aggregate Impact

General Equilibrium

- Output
- Capital
- TFP

$b^{MF}/w(0)$
Aggregate Impact: GE vs. PE

General Equilibrium

Output
- Capital
- TFP

Partial Equilibrium

Output
- Capital
- TFP
Understanding Capital Accumulation

- Saving top 5:
  - Income top 5:
  - Saving bottom 95:

\[ b^{MF}/w(0) \]
Distribution of Welfare Gains
Distribution of Welfare Gains, $b^{MF} = 1.5w$

fraction of permanent consumption
Conclusion

- In GE, microfinance is primarily a redistributive policy
- Potential impact on consumption & productivity, but not aggregate output as it discourages capital accumulation.
- More broadly, large gains from trade between empirical development and macro quantitative development