Lecture 17: Finance II: The Microcredit Promise?

Dave Donaldson and Esther Duflo

14.73 Challenges of World Poverty

Microcredit: Plan for Lecture

- A simple credit-based 'poverty trap' model
  - Similar in flavor to the nutrition-based poverty trap model we saw earlier in the course
- What is the evidence for credit constraints?
  - Do firms want to borrow more?
  - de Mel, McKenzie and Woodruff (2008)
- What happens when a microcredit program opens up?
  - Banerjee, Duflo, Glennerster and Kinnan (2009)

A Credit-Based Poverty Trap Model

- What happens in a world where people can't borrow (or there is some 'credit constraint')?
- Banerjee and Newman (1993):
  - Poverty begets poverty—a 'poverty trap'
  - Two nations that are identical, apart from the extent of their 'credit constraints', will diverge in economic growth
  - Two nations that are identical, apart from their initial levels of inequality, both of which face credit constraints, will diverge in economic growth (the more unequal, the slower the growth)
  - Inequality within countries can get worse over time

Intuition I

- Imagine two production technologies are on offer:
  1. Modern: One machine (which costs \$200 and depreciates fully each period) plus one worker makes \$1000 of output. Note that this technology features a *fixed cost*, which matters a great deal for this story. Why?
  2. Subsistence: One worker makes \$10 of output
- Imagine two people are in this society and they have a total of \$400 net worth at the start of the period.

Intuition II

- Contrast a number of settings of the *initial wealth distribution* and the *level of credit constraints*
  - Equal, no constraints: If they both have \$200 to start with (ie the society is very equal to start with), then they can both buy the machine and make a profit (=GDP, here) of $2 \times (1000 - 200) = \$1600$
  - Equal, constraints: Same thing. No one wants to borrow anyway.
  - Unequal, no constraints: If one has \$100 and the other has \$300, but they are able to borrow and lend to one another, then they can both buy the machine and make a total profit of \$1600
  - Unequal, constraints: If one has \$100 and the other has \$300, and they are sufficiently credit constrained that the rich guy will not lend more than \$99: the rich person makes \$800 profit (and ends with \$900), and the poor person makes \$10 profit (and ends with \$10)

Intuition III

- Can extend this model and add ability for people to choose to become entrepreneurs or workers (who work for entrepreneurs)
- This strengthens the above effects:
  - With borrowing constraints, the poor choose to work for the entrepreneurs.
  - Higher inequality means more workers, which means lower wages for workers and higher profits for entrepreneurs $\longrightarrow$ more inequality

Influential World View

- Two influential implications of this sort of credit trap model:
  1. The persistence of underdevelopment: Small frictions (eg credit constraints) can have big consequences for aggregate economic output. Just like other 'trap models' we've seen (nutrition poverty trap, Basu model of child labor)

  2. The historical legacy of colonialism: Regions left with high inequality (eg Latin America, sub-Saharan Africa) are poorer if access to credit is imperfect. We will return to this topic.

Are Credit Constraints Plausible?

- Why might credit constraints exist?

Hard Evidence of Credit Constraints

- Do firms want to borrow more than they are able to?
  - That is, are firms' internal returns on capital higher than the external return on capital (the market interest rate)?
- If so, why would this be evidence for credit constraints?
- de Mel, McKenzie and Woodruff (2008):
  - Give cash, or equipment, to randomly-chosen microenterprises (less than $1000 in invested capital) in Sri Lanka
  - Equipment selected by enterprise owner, but purchased by researchers
  - Examine effect on capital stock and profits to infer return on capital

Results: Effect on Capital and Profits

From de Mel et al (2008)

Table II: Effect of Treatments on Outcomes

Impact of Treatment Amount on:	Capital Stock (1)	Log Capital Stock (2)	Real Profits (3)	Log Real Profits (4)	Owner Hours Worked (5)
10,000 LKR In-kind	4793*	0.40***	186	0.10	6.06**
	(2714)	(0.077)	(387)	(0.089)	(2.86)
20,000 LKR In-kind	13167***	0.71***	1022*	0.21*	-0.57
	(3773)	(0.169)	(592)	(0.115)	(3.41)
10,000 LKR Cash	10781**	0.23**	1421***	0.15*	4.52*
	(5139)	(0.103)	(493)	(0.080)	(2.54)
20,000 LKR Cash	23431***	0.53***	775*	0.21*	2.37
	(6686)	(0.111)	(643)	(0.109)	(3.26)
Number of enterprises	385	385	385	385	385
Number of observations	3155	3155	3248	3248	3378

Notes: Data from quarterly surveys conducted by the authors reflecting 9 waves of data from March 2005 through March 2007. Capital stock and profits are measured in Sri Lankan rupees, deflated by the Sri Lankan CPI to reflect March 2005 price levels. Columns 2 and 4 use the log of capital stock and profits, respectively. Profits are measured monthly and hours worked are measured weekly. All regressions include enterprise and period (wave) fixed effects. Standard errors, clustered at the enterprise level, are shown in parentheses. Sample is trimmed for top 0.5% of changes in profits.

*** p<0.01, ** p<0.05, * p<0.1

Hard Evidence of Credit Constraints II

- Estimates imply a return on capital of 55-63 % per year
- This is considerably higher than market interest rates in this area (12-18 % per year)
- Suggestive of credit constraints: firms would happily borrow at these market rates, but they are not able to (banks won't lend to them at this rate)

More Evidence

- de Mel et al (2008): study existing borrowers and give them capital
- What happens when an MFI moves into an area and offers credit (on better terms than were available before?)
  - $\rightarrow$ Banerjee, Duflo, Glennerster and Kinnan (2009)

The Microcredit Promise: Claims

- The film *Small Change*
- The World Bank (CGAP): "What Do We Know About the Impact of Microfinance?"
  - Eradication of poverty and hunger
  - Universal primary education
  - Promotion of gender equality
  - Empowerment of women
  - Reduction in child mortality
  - Improvement in maternal health
- Boston Globe op-ed (2008): "Small Loans, Big Gains"
- Tyler Cowen (in Boston Globe, 2009): "The fact that [microcredit] has survived commercially, I take that more seriously than any other piece of evidence."

The Need for Randomized Evaluations

- There is a correlation between microcredit presence and improved economic/social outcomes
- Why might this not necessarily imply that microcredit access *caused* these improved outcomes?

Banerjee et al (2009)

- One of first opportunities to evaluate a microcredit program through randomization
  - Also Karlan and Zinman (2009), as discussed in Boston Globe article.
- Why have microcredit programs been so hard to evaluate?

Experiment Setting

- Work with Spandana, MFI in India (in the film)
- They offer a canonical group lending product:
  - 6-10 women formed into groups (groups form by themselves)
  - Some eligibility restrictions (female, 18-59, reside in same place for last year, proof of ID, 80 % of members must own home)
  - Joint liability loan to the group
  - Small loans: $1000 at PPP
  - 50 weeks to repay principal and interest (20 APR)
  - If repay, can get follow-up, bigger loans
  - Loans need not be tied to any activity
  - Unlike Grameen, no parallel track in 'empowerment' or training of any sort

Randomization:

- 104 neighborhoods selected by Spandana as attractive places to open up
  - Attractive clients
  - Not already served by MFIs
  - 'Slums'
- Randomize:
  - 52 of these neighborhoods in Treatment
  - 52 in 'Comparison' group

Surveys:

- Baseline survey in 2005
- Follow-up survey in 2007-08, 12-18 months after loans disbursed

Context: Households at Baseline I

- Borrowing activity:
  - Almost no MFI borrowing
  - Yet 69 % had at least one loan (of median size $1000 PPP, average monthly interest rate of 3.85 % per month)
  - Loans from: moneylenders (49 %), family members (13 %), friends/neighbors (28 %); very rarely commercial bank
- Entrepreneurship:
  - 31 % of hhds ran at least one business ($=$ 12 % in OECD)
  - But very small: 10 % had employees, 20 % have no assets (typical assets are sewing machine, table and chairs, weigh scales, push carts)

Context: Households at Baseline II

- Consumption smoothing:
  - 34 % had savings account
  - 26 % had life insurance policy
  - none had health insurance

First, Important Question

- Did Spandana entry actually increase *total* MFI borrowing in these areas?
- Why wouldn't it have?

First, Important Question

- Did Spandana entry actually increase *total* MFI borrowing in these areas?
- Why wouldn't it have?
  - T group got more Spandana branches, and more Spandana loans
  - But other MFIs opened up in this time period—and may have gone to the C group areas
  - Was there a difference between T and C in terms of microcredit loans?

Was there a difference between T and C in terms of microcredit loans?

Table 2: First stage

	(1)	(2)	(3)	(4)
	Spandana	Any MFI	Spandana borrowing (Rs.)	MFI borrowing (Rs.)
	b/se	b/se	b/se	b/se
Treatment	0.133***	0.083***	1408.018***	1257.368***
	[0.023]	[0.030]	[260.544]	[473.802]
Control Mean	0.053	0.187	603.377	2421.505
Control Std Dev	0.224	0.39	2865.088	6709.473
N	6651	6651	6651	6651

Note: Cluster-robust standard errors in brackets. Results are weighted to account for oversampling of Spandana borrowers. * means statistically significant at 10%, ** means statistically significant at 5%, *** means statistically significant at 1%.

Where the Loans Went

- What did they say they'd spend the money on?
  - 30 %: starting new business
  - 22%: buy stock for existing business
  - 30%: repay existing loan
  - 15%: buy durable good for household
  - 15%: smooth household consumption

Results: New Businesses and Business Profits

32 % more new businesses

Or, 1 in 5 of the new MFI loans creates a new business

Table 3: Impacts on business creation and business outcomes

	All households	Business owners			
	(1)	(2)	(3)	(4)	(5)
	New businesses	Profit	Inputs	Revenues	Employees
Treatment	0.017**	4809.835**	2089.988	6899.823	-0.028
	[0.008]	[2032.781]	[4641.245]	[4925.634]	[0.084]
Control Mean	0.053	1703.821	13006.159	14709.98	0.384
Control Std Dev	0.25	55195.7	59056.7	55860.0	1.656
N	6756	2365	2365	2365	2365

Note: Cluster-robust standard errors in brackets. Profits, inputs and revenues are monthly, measured in Rs. Results are weighted to account for oversampling of Spandana borrowers. * means statistically significant at 10%, ** means statistically significant at 5%, *** means statistically significant at 1%.

Results: Household Expenditure

Table 4: Impacts on monthly household expenditure (Rs per capita)

	(1) Total PCE	(2) Nondurable PCE	(3) Durable PCE	(4) Durables used in a business	(5) "Temptation goods"
Treatment	37.375	17.723	22.300*	6.790*	-8.999*
	[46.221]	[40.686]	[11.680]	[3.488]	[5.169]
Control Mean	1419.229	1304.786	116.174	5.335	83.88
Control Std Dev	978.299	852.4	332.563	89.524	130.213
N	6821	6775	6775	6817	6857

Note: Cluster-robust standard errors in brackets. "Temptation goods" include alcohol, tobacco, gambling, and food and tea outside the home. Durables include assets for household or business use. Results are weighted to account for oversampling of Spandana borrowers. * means statistically significant at 10%, ** means statistically significant at 5%, *** means statistically significant at 1%.

Results: Education, Health, 'Empowerment'

Table 8: Treatment effects on empowerment, health, eduction

	Women's empowerment: All households			Health: HHs w/ kids 0-18	Education: Households with children 5-18		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Woman makes spending decisions	Woman makes nonfood spending decisions	Health expenditure (Rs per capita/mo)	Child's major illness	Kids in school	Girls in school (HHs w/ girls 5-18)	Educ. Expenditure (Rs per capita/mo)
Treatment	0.000	-0.001	-2.608	-0.001	-0.028	-0.043	5.017
	[0.011]	[0.014]	[12.431]	[0.024]	[0.036]	[0.035]	[12.300]
Control Mean	0.930	0.901	140.253	0.241	1.42	0.72	145.945
Control Std Dev	0.255	0.299	455.74	0.539	1.251	0.882	240.594
N	6849	6849	6821	5123	5439	4058	5409

Note: Cluster-robust standard errors in brackets. Decisions include household spending, investment, savings, and education. Health expenditure includes medical and cleaning products spending. Educational expenditure includes tuition, school fees and uniforms. Results are weighted to account for oversampling of Spandana borrowers. * means statistically significant at 10%, ** means statistically significant at 5%, *** means statistically significant at 1%.

What Does This Study Tell Us About Microcredit?

14.73 The Challenge of World Poverty
Fall 2009