ECON 326: Economics of Developing Countries
TA Session 7

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- Beaman, Karlan, Thuysbaert & Udry (2023)
- Feigenberg, Field, & Pande (2013)
- Karlan and Zinman, (2009)

Beaman, Karlan, Thuysbaert & Udry (2023)

Selection Into Credit Markets: Evidence from agriculture in Mali

Overview

- Returns to investment in productive activities may be heterogenous
- Financial markets ought to help capital flow to the highest return activities.
- But do they?
- Market failures in financial and credit markets could impede efficient allocation of capital
- This paper examines the extent to which a lending program for smallholder farmers in Mali successfully identifies and allocates credit to the farmers with higher returns to investment

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RCT Design I

- ▶ Two-stage RCT
- ▶ Stage 1: A microcredit organisation offered group-liability loans to all women in 88 randomly selected villages in Mali
- ▶ Stage 2: After decisions to take up the loan were made, a random subset of households that did not borrow in loan villages and in non-loan villages were immediately given a cash grant
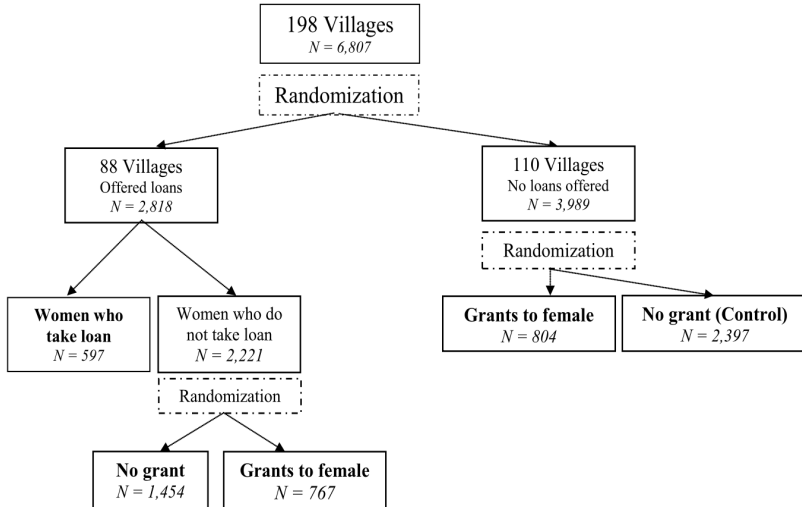- ▶ Key idea: identify whether those who chose not to borrow have lower average returns to a grant

FIGURE 1.—Experimental design: allocation of households to treatments.

Strategy

- We want to estimate β_1 and β_2 in

$$Y_i = \alpha_i + \beta_1 grant_i + \beta_2 grant_i \times loan_{v(i)} + \gamma_1 loan_{v(i)} + \epsilon_i$$

- Y_i - outcome of interest (profits)
- $grant_i = 1$ if household i receives the cash grant
- $loan_{v(i)} = 1$ if household i is in a village $v(i)$ that gets loans (but if so, this means i got shut out of the credit market)
- β_1 is the effect of the cash grant in non-loan villages
- β_2 is the additional effect of the cash grant on households from loan villages denied loans (for them, the total effect of cash grants is $\beta_1 + \beta_2$)

Results I

- Within randomly selected loan villages, the "best" farmers seem to be the ones who get the loans
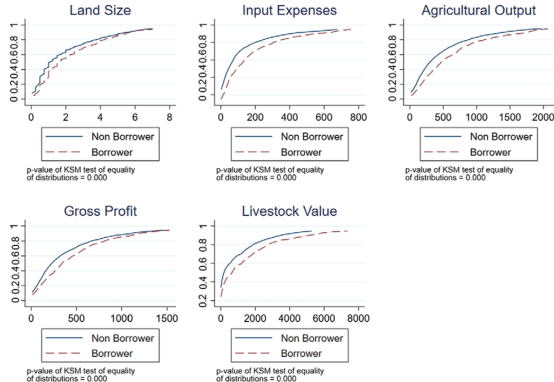- They have more assets and make more profits

FIGURE 3.—Baseline characteristics of borrowers versus non-borrowers in loan villages.

Results II

- **Main result:** Cash grant is less effective in loan villages
- In both loan and no-loan villages, grant recipients increase consumption
- But effects on recipients' economic performance, as measured by their farms' profits, are only observed in no-loan villages
- Suggests that those not selected into credit have lower profitability: receiving money does not raise their profits too much

FIGURE 4.—CDF of gross profit.
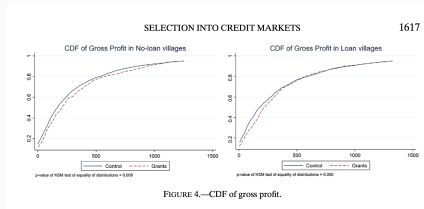
Results III

▶ Column 10 presents the key result: $\beta_1 + \beta_2 = 0$ for profits
▶ So is it okay that these households are excluded from the credit market?

TABLE II

AGRICULTURE—YEAR 1.

	Land cultivated (ha)	Land planted with rice and groundnut (ha)	Used plough (0/1)	Quantity seeds (Kg)	Family labor (days)	Hired labor (days)	Fertilizer and chemical expenses (USD)	Total input expenses (USD)	Value agricultural output (USD)	Gross Profit (USD)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Grant β_1	0.26	0.09	0.06	7.32	6.49	3.22	24.06	34.39	74.73	42.77
	(0.07)	(0.02)	(0.01)	(2.49)	(4.55)	(0.99)	(6.85)	(8.84)	(21.46)	(16.84)
	[0.000]	[0.000]	[0.000]	[0.004]	[0.111]	[0.000]	[0.000]	[0.000]	[0.000]	[0.002]
Grant * loan village β_2	−0.22	0.01	0.00	0.85	−5.85	2.03	−19.74	−16.49	−53.95	−43.05
	(0.11)	(0.04)	(0.02)	(4.02)	(7.00)	(1.60)	(9.47)	(12.81)	(30.11)	(23.18)
	[0.023]	[0.875]	[0.936]	[0.820]	[0.348]	[0.126]	[0.039]	[0.184]	[0.203]	[0.239]
p-value for $\beta_1 + \beta_2 = 0$	0.637	0.001	0.001	0.010	0.905	0.000	0.507	0.054	0.327	0.986
N	5393	5440	5393	5392	5393	5393	5440	5393	5392	5392
Mean of control (year 1)	2.15	0.90	0.80	91.16	140.54	18.02	125.64	196.24	526.74	330.51
SD of control (year 1)	2.38	0.78	0.40	83.51	140.99	25.39	221.74	275.56	660.14	475.35
Per $100 impact for loan takers	0.77	0.05	0.05	2.95	20.35	−3.14	70.23	68.88	198.35	146.24
	(0.32)	(0.11)	(0.07)	(11.97)	(21.06)	(4.77)	(29.19)	(39.05)	(92.45)	(71.48)

Feigenberg, Field, & Pande (2013)

Building Social Capital Through Microfinance

This paper

- In developing countries, often there is a lack of formal insurance and contract enforcement mechanisms
- Thus social capital can be particularly valuable
- This paper examines the role of repeated social interactions in building social capital

Setting

- ▶ Collaborated with a MFI in West Bengal, India
- ▶ A loan officer conducted a meeting to inform female residents about the loan product that was available
- ▶ Interested women were invited to a five-day training program, after which they were assigned into groups of 10 with a team leader
- ▶ Clients in a single group lived in close proximity to each other

Experimental Design

- Each group was offered an individual-liability loan of $100 with a repayment schedule that would be assigned later
- Groups were randomised into weekly or monthly schedules:
  - ▷ Control: 38 groups who met on a monthly basis, repaid in 11 monthly installments
  - ▷ Treatment 1: 30 groups who met on a weekly basis, repaid in 44 weekly installments
  - ▷ Treatment 2: 32 groups who met on a weekly basis but repaid monthly
- Meetings:
  - ▷ Meetings were held in the team leader's house in the presence of as assigned loan officer
  - ▷ Clients took an oath to repay the loan regularly and deposited payment with the loan officer
  - ▷ Client behaviour was observable to other team members
  - ▷ Compliance with meeting protocol was high in Control and Treatment 1 groups, Treatment 2 had poor compliance rates

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Randomisation Check

Table 1. Randomization Check

	All Clients			Lottery/Long-Run Survey Clients		
	Control Mean (Monthly-Monthly)	Treatment 1 (Weekly-Weekly)	Treatment 2 (Weekly-Monthly)	Control Mean (Monthly-Monthly)	Treatment 1 (Weekly-Weekly)	Treatment 2 (Weekly-Monthly)
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A						
Age	33.969	-0.593	-1.110	33.832	-0.806	-0.920
	(8.553)	(0.813)	(0.724)	(8.418)	(0.810)	(0.764)
Literate	0.865	-0.012	-0.059	0.880	-0.012	-0.059
	(0.342)	(0.035)	(0.039)	(0.325)	(0.036)	(0.040)
Married	0.862	0.013	0.005	0.871	0.025	-0.009
	(0.345)	(0.031)	(0.030)	(0.336)	(0.030)	(0.029)
Household Size	3.821	0.153	0.207*	3.903	0.068	0.106
	(1.335)	(0.106)	(0.114)	(1.357)	(0.119)	(0.124)
Muslim	0.023	-0.023	0.118**	0.026	-0.026	0.122*
	(0.151)	(0.021)	(0.060)	(0.159)	(0.023)	(0.062)
Years Living in Neighborhood	17.423	-2.010**	-0.931	17.136	-2.175**	-0.456
	(10.473)	(0.889)	(0.919)	(10.407)	(0.903)	(0.976)
Number of Clients in Group	10.364	-0.086	-0.037	10.385	-0.073	-0.054
	(0.727)	(0.185)	(0.192)	(0.741)	(0.199)	(0.196)
Group Formed in Rainy Season	0.595	-0.147	-0.109	0.654	-0.154	-0.159
	(0.492)	(0.122)	(0.120)	(0.477)	(0.124)	(0.119)
Heavy Rain Days	5.265	-0.128	-0.477	5.453	-0.205	-0.614
	(2.070)	(0.545)	(0.519)	(2.060)	(0.576)	(0.534)
Panel B						
Client Worked for Pay in Last 7 Days	0.525	0.060	0.011	0.524	0.056	0.018
	(0.500)	(0.053)	(0.053)	(0.500)	(0.053)	(0.053)
Household Earns Fixed Salary	0.442	-0.079*	0.023	0.437	-0.065	0.048
	(0.497)	(0.044)	(0.049)	(0.497)	(0.046)	(0.050)
Household Owns Business	0.717	0.038	-0.080	0.718	0.034	-0.085
	(0.451)	(0.049)	(0.061)	(0.450)	(0.053)	(0.061)
Household Savings	1636.2	325.7	1238.9	1828.7	103.3	1125.2
	(5793.7)	(564.8)	(762.9)	(6405.5)	(653.7)	(840.5)
Household Owns Home	0.808	-0.033	-0.035	0.828	-0.048	-0.047
	(0.395)	(0.044)	(0.047)	(0.378)	(0.046)	(0.048)
Education Expenditures	4183.9	559.5	-278.2	4490.2	112.0	-598.2
	(4868.2)	(407.8)	(356.3)	(4919.3)	(456.7)	(392.9)
Health Expenditures	3311.4	-35.0	-399.4	3241.4	-87.7	-226.9
	(5262.1)	(522.2)	(432.4)	(5154.4)	(562.9)	(432.1)
Illness in Past 12 Months	0.314	0.029	-0.080*	0.307	0.016	-0.062
	(0.465)	(0.048)	(0.046)	(0.462)	(0.053)	(0.049)
Number of Transfers into Households	1.388	0.172	-0.503	1.085	0.205	-0.185
	(6.796)	(0.542)	(0.449)	(4.659)	(0.362)	(0.335)
Number of Transfers out of Households	2.613	0.282	-0.253	2.563	0.311	-0.147
	(4.693)	(0.604)	(0.558)	(4.728)	(0.658)	(0.592)
Days between Loan Disbursement and Lottery				788.312	-0.211	13.977
				(46.182)	(11.360)	(10.968)
N	385	306	325	309	250	297

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Meeting Frequency and Social Interactions

Table 2. Meeting Frequency and Social Interactions in the Short Run and Long Run

	Short Run	Long Run			
	Social Contact Index	Total Times Met	Attend Durga Puja	Talk Family	Social Contact Index
	(1)	(2)	(3)	(4)	(5)
Panel A: No Controls					
Treatment 1	3.005***	2.045**	0.069*	0.070*	0.186**
(Weekly-Weekly)	(0.107)	(1.001)	(0.038)	(0.039)	(0.080)
Panel B: Controls Included					
Treatment 1	3.052***	2.054**	0.081**	0.071**	0.199***
(Weekly-Weekly)	(0.092)	(0.891)	(0.039)	(0.035)	(0.073)
Control Mean		5.475	0.153	0.229	
(Monthly-Monthly)		[10.386]	[0.360]	[0.421]	
Specification	OLS	OLS	Probit	Probit	OLS
N	684	3026	3023	3026	3026

▶ Use survey to ask clients about how frequently they interact with group members at the end of meetings

▶ Switching a client from monthly to weekly meetings increases social contact with the group by over 3 sd.

▶ These differences are persistent

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Risk-sharing

- The authors examine whether increased social interaction facilitated risk-sharing arrangements
- Play field-based lottery games to elicit willingness to form risk-sharing arrangements
- A client was chosen for the lottery and could choose to give tickets to other group members

Table 3. Meeting Frequency and Risk-Sharing: Ticket-Giving and Transfers

	Main Lottery			Supplementary Lottery	Transfers		
		Gave Ticket					
	All	1-Rs. 200 Voucher	4-Rs. 50 Vouchers	All	Close Family/ Friend	Neighbor/ Other Relative	Other Non-Relative
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: No Controls							
Treatment 1	0.067**	0.043	0.091*	-0.005	0.016	0.122**	-0.019
(Weekly-Weekly)	(0.034)	(0.041)	(0.048)	(0.069)	(0.065)	(0.061)	(0.028)
Group Member				0.068**			
				(0.034)			
Treatment 1*Group				0.157**			
Member				(0.079)			
Panel B: Controls Included							
Treatment 1	0.072**	0.044	0.105**	0.0001	0.019	0.126**	-0.011
(Weekly-Weekly)	(0.033)	(0.039)	(0.048)	(0.071)	(0.066)	(0.058)	(0.024)
Group Member				0.073**			
				(0.036)			
Treatment 1*Group				0.158*			
Member				(0.081)			
Control Mean	0.281	0.277	0.285	0.223	0.426	0.309	0.067
(Monthly-Monthly)	[0.450]	[0.448]	[0.452]	[0.417]	[0.495]	[0.463]	[0.250]
Specification	Probit	Probit	Probit	Probit	Probit	Probit	Probit
N	5282	2695	2587	847	651	651	651

▶ Column 1: Treatment 1 clients gave 23.8% more tickets than the Control group

Loan Default

Table 4. Meeting Frequency and Default: Evidence from the Second Loan Cycle

	Default		Group Met Weekly	Default
	(1)	(2)	(3)	(4)
Panel A: No Controls				
Treatment 1	-0.052**	-0.052**		
(Weekly-Weekly)	(0.021)	(0.021)		
Treatment 2 (Weekly-Monthly)*Heavy Rain Days			-0.118***	
			(0.020)	
Treatment 2			1.086***	
(Weekly-Monthly)			(0.152)	
Heavy Rain Days			0.025	
			(0.016)	
Group Met Weekly				-0.077**
				(0.038)

▶ Second loan offered with same terms for both Control and Treatment 1 clients

▶ Columns (1) and (2): Treatment 1 clients nearly 3 times (5.2%) less likely to default on second loan relative to Control

Discussion

- A program that encourages repeat interactions increases long-run social ties
- Enhances social capital
- Improved risk-sharing in a setting where contract enforcement is weak $\rightarrow$ welfare-improving

Karlan and Zinman (2009)

Observing Unobservables: Identifying Information

Asymmetries with a Consumer Credit Field Experiment

This paper

▶ Seminal work in the field of consumer finance in developing countries
▶ RCT to study the effect of interest rates on default, summarized in the figure
▶ Seeks to disentangle how interest rates affect default through (1) adverse selection, (2) moral hazard, (3) repayment burden
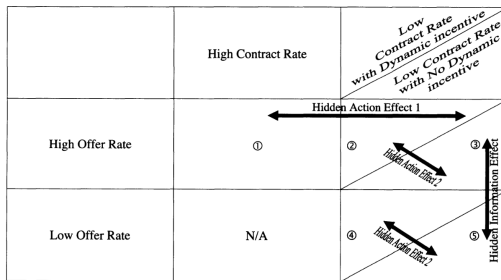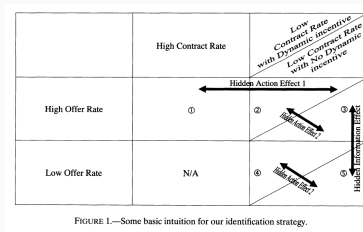

FIGURE 1.—Some basic intuition for our identification strategy.

Adverse Selection

FIGURE 1.—Some basic intuition for our identification strategy.

▶ The paper tests whether interest rates affect default by screening out low-quality borrowers
▶ This is done comparing 2 vs. 4 and 3 vs. 5
▶ These are pairs of groups who face the same contract rate and the same repayment incentives
▶ They only differ in the loan that was initially offered to them, which determined who accepted to participate in the study
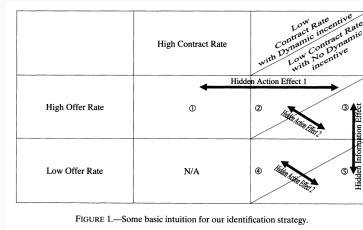
Moral Hazard

FIGURE 1.—Some basic intuition for our identification strategy.

- ▶ The paper tests whether interest rates affect default because they are typically higher on those with bad credit histories
- ▶ So interest rates can be used as punishments on those who default
- ▶ To isolate this channel, compare 2 vs. 3 and 4 vs. 5
- ▶ These are pairs of groups with same offer and contract rates
- ▶ They differ in whether they receive a dynamic incentive: groups 2 and 4 are told that their future interest rate will depend on whether they default

Repayment Burden

FIGURE 1.—Some basic intuition for our identification strategy.
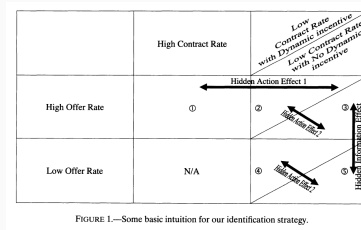
- ▶ The paper tests whether interest rates affect default more mechanically, by simply making the amount to be repaid higher
- ▶ This is done comparing 1 vs. 2 and 3
- ▶ A higher contract rate (on group 1) has a cost effect: the loan becomes more difficult to pay off so default will mechanically go up
- ▶ But the higher contract rate affects the decision to default via moral hazard too: defaulting becomes more attractive

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