Microfinance

How Does it Work & Does it Work?

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Harvard University

Road Map

Over the next two lectures, we will cover:

1. What is Microfinance?
2. How Does Microfinance Work?
3. Does Microfinance Work:
   - For Everybody?
   - For Some?
4. How to Improve Microfinance?
5. Aggregate Impacts of MF

I will plan to pause for question breaks between topics

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What is Microfinance?

Target borrowers:

- Typically rural, un(der)banked households
- Focus on women
- No formal credit history

Basic features:

- Small loans (India starting size $\approx$ \$200)
- Collateral-free
- Fixed repayment schedule (e.g.., weekly, monthly)
- Ability to obtain new, often larger loan upon repayment
- Group structure
  - Traditional model has joint liability
  - Mimics RoSCA or Savings Association

Microfinance brings **outside capital** into underbanked communities that had previously relied on informal credit

The Case for Microfinance

Practitioners highlighted following benefits of microcredit:

- Expansion in credit supply
  - Formal, collateral-free credit (previously unavailable)
  - Lower interest rates than moneylenders
- Entrepreneurship (specifically women's entrepreneurship)
  - (Requirement by many MFIs that loans be used for business)
  - Use loans for business creation and expansion
  - Unlock entrepreneurship potential of poor women
  - Improve HH income
- Downstream impacts on HH
  - Women's empowerment, confidence, respect
  - Investments in education of children

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Entrepreneurship benefits largely consistent with models from Prof. Banerjee's lecture

- Low-wealth entrepreneurs rationed from credit market
- There exist firms with high returns who cannot borrow
- If directed to those entrepreneurs, MF should have meaningful impacts on firm growth and entry

Microfinance: Darling of Development Community?

- Discussion of "silver bullet" in fighting poverty
- Interest by VC investors, ample funding for sector

Microfinance: Darling of Development Community?

Then, world seemed to fall out of love with microfinance

- June 2009 WSJ "A Global Surge in Tiny Loans Spurs Credit Bubble in a Slum"
- October 2010 WSJ "India's Major Crisis in Microlending: Explosion of Interest Backfires"

And a redemption?

- June 2016 WSJ "A New Way to Lend to the Poor: Microfinance is Making a Comeback..."

Since 2005, tremendous body of rigorous research on microfinance.

Microfinance "Works"

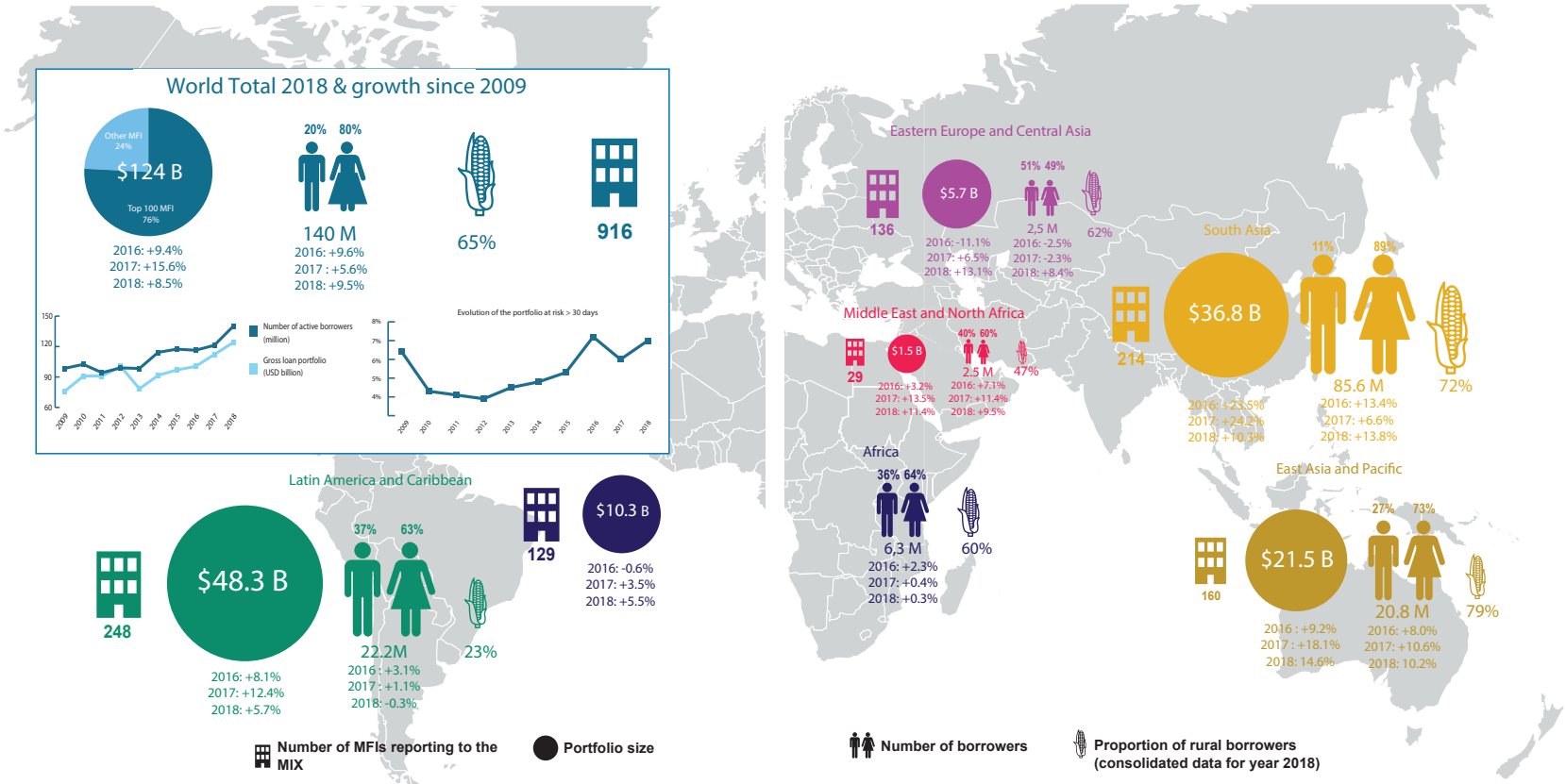
Contracting frictions rampant for target borrowers

- Moral Hazard on project choice and effort
- Ex post moral hazard
  - Even with collateralizable assets, impossible to enforce creditor rights, repossess assets
- Target pop. very heterogeneous, hard to observe "type"

At a basic level, microfinance "works":

- Typical borrower underbanked by formal sector
  - (Doesn't necessarily mean credit constrained, though)
- Extremely low default rates
  - $\Longrightarrow$ MF has found a way to "solve" the moral hazard problem"
- Economizes on screening costs, largely homogenous loans
- In "good" times, can be very profitable
  - Phases of private equity investment, IPOs
- $\Longrightarrow$ Microfinance is scalable and sustainable
  - Rare private sector win

Microfinance in 2019



Source: Microfinance Barometer 2019

Question Break

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Microcredit Contract Features

Which of these contract features is important in delivering low default rates and high profits?

- Typically small loans (India starting size of $\approx$ \$200)
- Borrowers tend to be women
- Fixed, regular repayment schedule (e.g.., weekly, monthly)
- Ability to obtain new, often larger loan upon repayment
- Group structure

Why are default rates so low?: Lend to women?

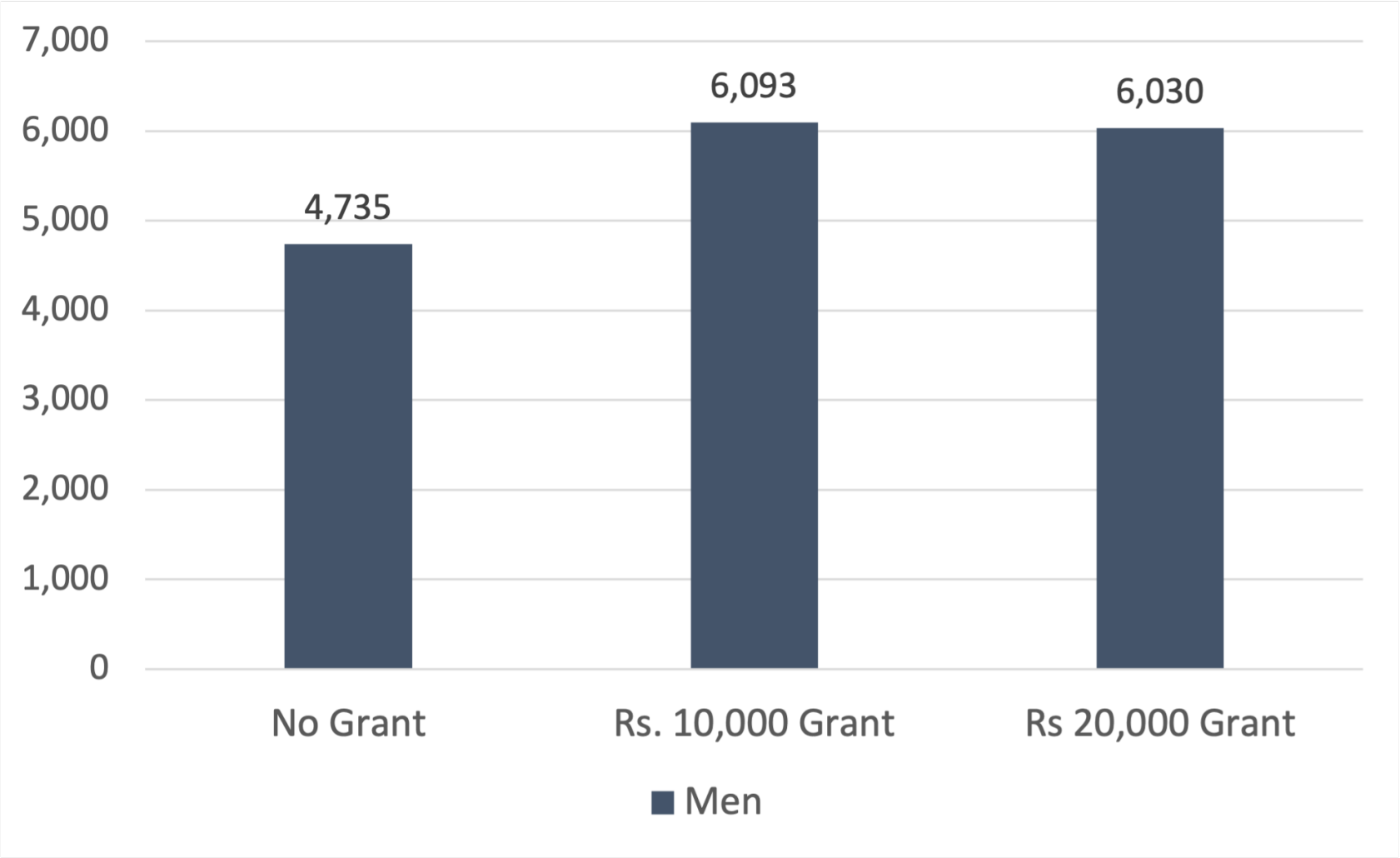
Motivations for focus on women:

1. Social goal: Lending to women may improve women's power in the household (which is an objective in itself and could also have consequences within the household).
2. Women are more likely to have no other access to credit: may have higher returns.
3. Women are (intrinsically) more reliable or pliable.
    - Power imbalance between male loan officers and women borrowers

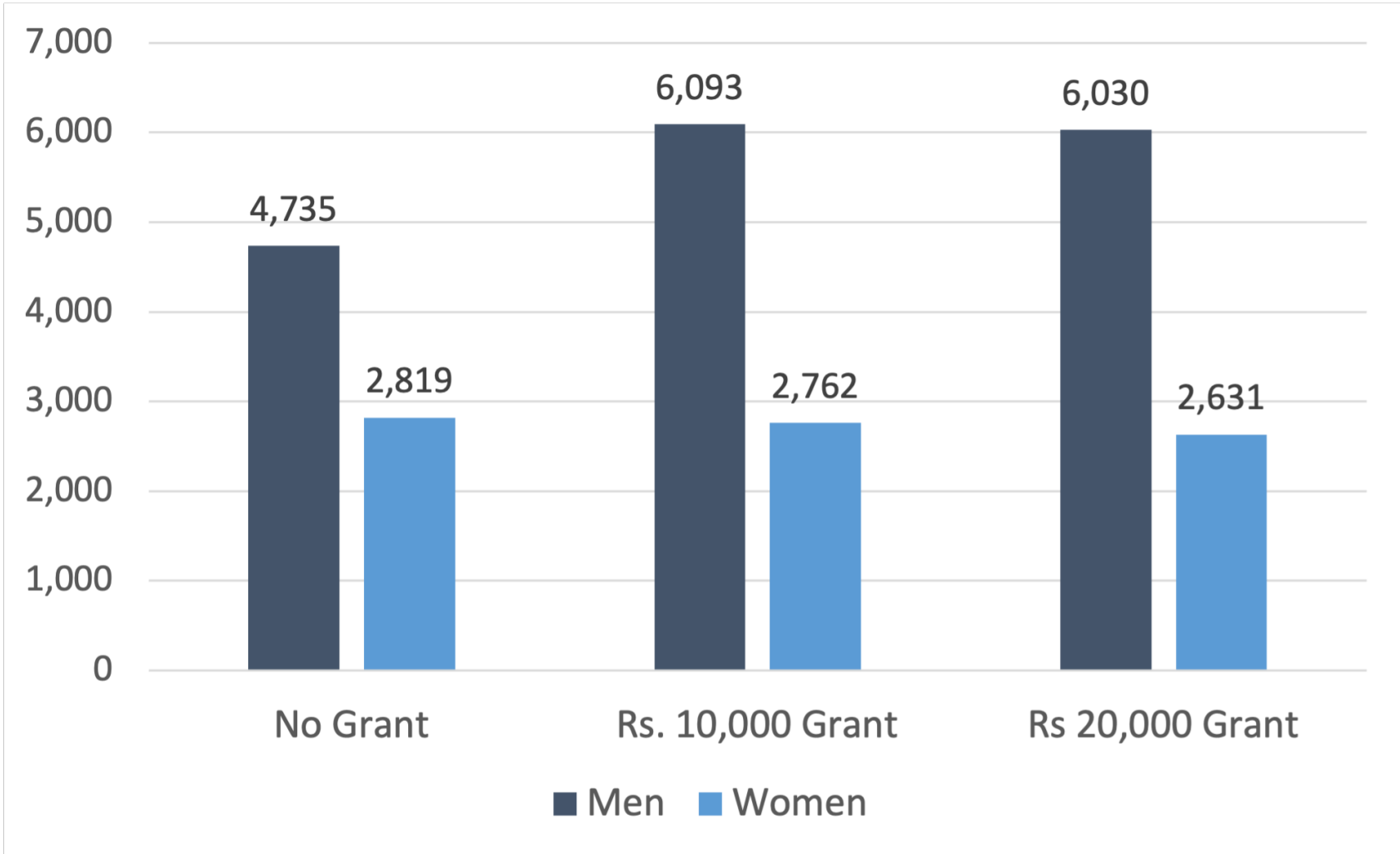
The Returns to Capital for Micro-Entrepreneurs: Sri Lanka

- Suresh de Mel, David McKenzie and Christopher Woodruff exprimentally measure returns to capital in Sri Lanka
- Starting from a census, identified 405 households which had a small business (retail or manufacturing), with less than $1,000 in fixed capital (excluding land and building).
- Conducted a survey and offered, as an encouragement to participate in the survey, a random prize drawing:
  - Control: No prize
  - $100 prize (cash or in kind)
  - $200 prize (cash or in kind)

Sri Lanka: Returns to Capital for Men



Sri Lanka: Returns to Capital for Men...and Women



Lending to Women

- Surprising results: Women's marginal product of the loan is about zero!
- Why is that?
  - The smaller loans are not invested in the business.
  - The larger loans are invested in the business, but women are often in less profitable industries.

Lending to Women

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- Bernhardt (2019) AERI piece "Revisiting the Returns to Capital among Female Microentrepreneurs"
  - Use data from Sri Lanka experiment (+ India, Ghana)
  - Zero returns to women's businesses *only* when the HH also has a male-owned business
  - Large returns when women's business is the only HH biz
  - Mechanism 1: sorting by sector, perhaps due to norms over relative earnings (man should earn more) or domestic duties
  - Mechanism 2: bargaining power and expropriation

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- Consistent with broader inefficient household literature (Udry 1996, Goldstein and Udry 2008)

Why are default rates so low?: Dynamic Incentives

- Logic: Borrowers have incentives to repay because if they do so, they will get a bigger loan in the future
- Simple example:
  - Suppose initial loan of $80
  - $10 due each month for 10 months
  - If repay, receive new loan of $95 in month 11

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- Simple example:
  - Suppose initial loan of \$80
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  - If repay, receive new loan of \$95 in month 11
- Problem: Potential arbitrage opportunity!
  - If default: keep all promised payments "under mattress"
  - At end of loan term, have \$100 saved
  - $\Longrightarrow$ Default if 2nd loan smaller than \$100
- Same logic for loans 3, 4, ...
  - Loan size needs to grow faster than the interest rate – unsustainable!
  - Same logic as Bulow and Rogoff (1989) – threat of credit denial insufficient to provide soverign borrowers incentives
- Dynamic incentives can't be the full story!
  - At a minimum, need something else too

Why are default rates so low?: Weekly repayments provide discipline

Many MFIs are convinced that regular repayment schedule is essential for repayment

- Structure and loan officer visits provide discipline
- Also provide reminders
- Easier to save a small vs. large amount towards weekly repayment if one tends to procrastinate
- (Also, easier to get peers to cover small amounts)

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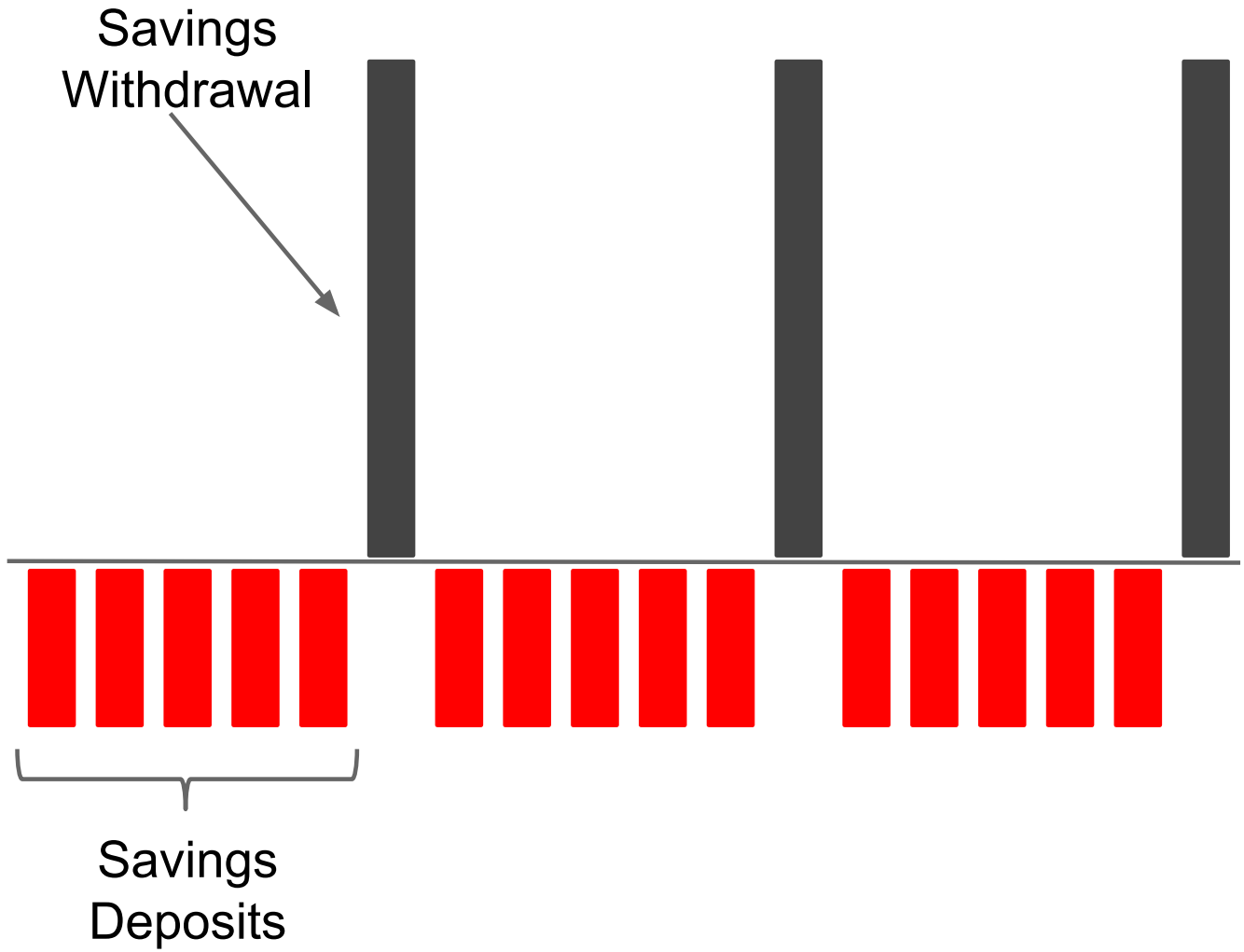
Discipline + Dynamic incentives might have bite!

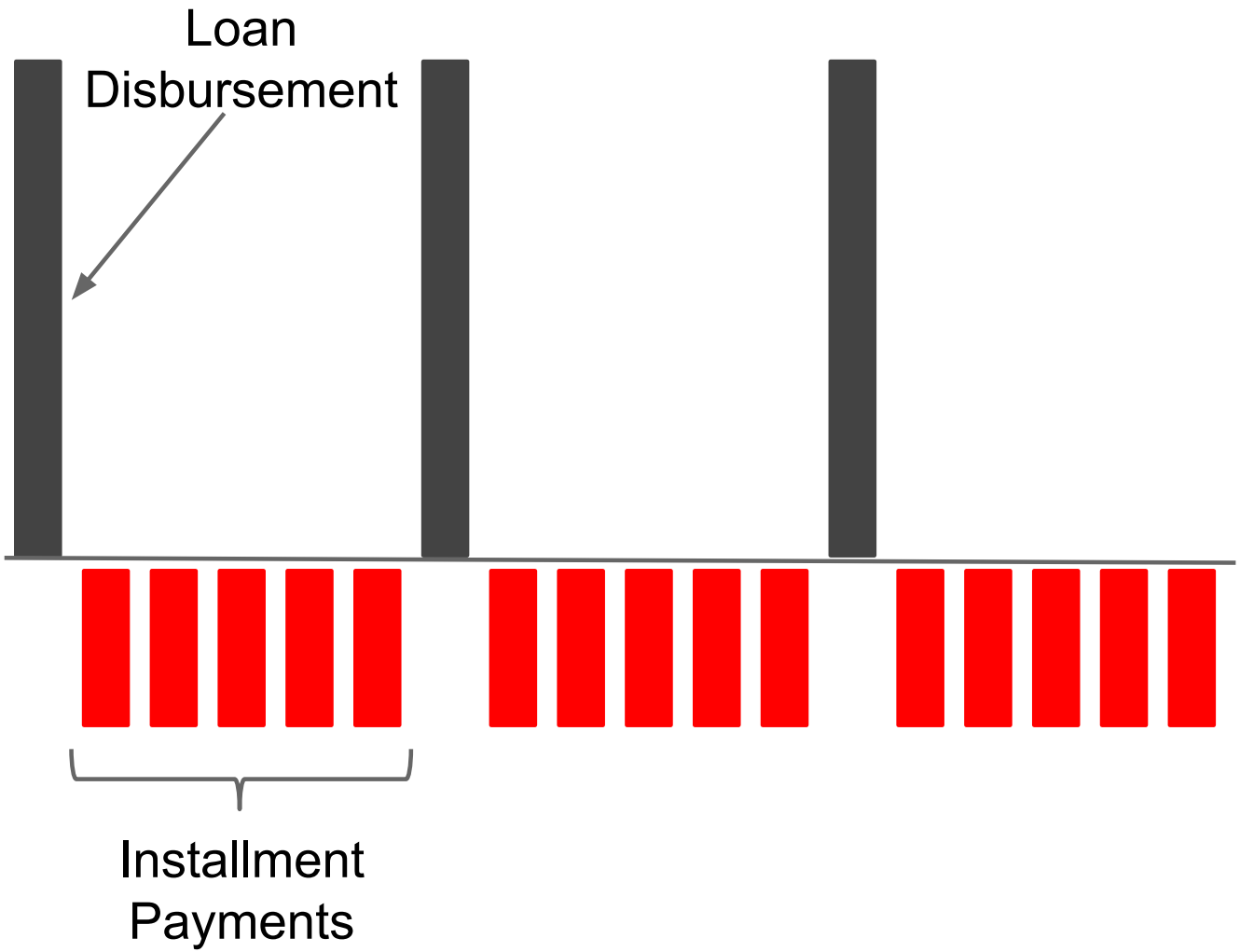
- For those individuals who do not have access to the under-the-mattress savings opportunity due to internal (or external) constraints

Aside: Savings Cycles



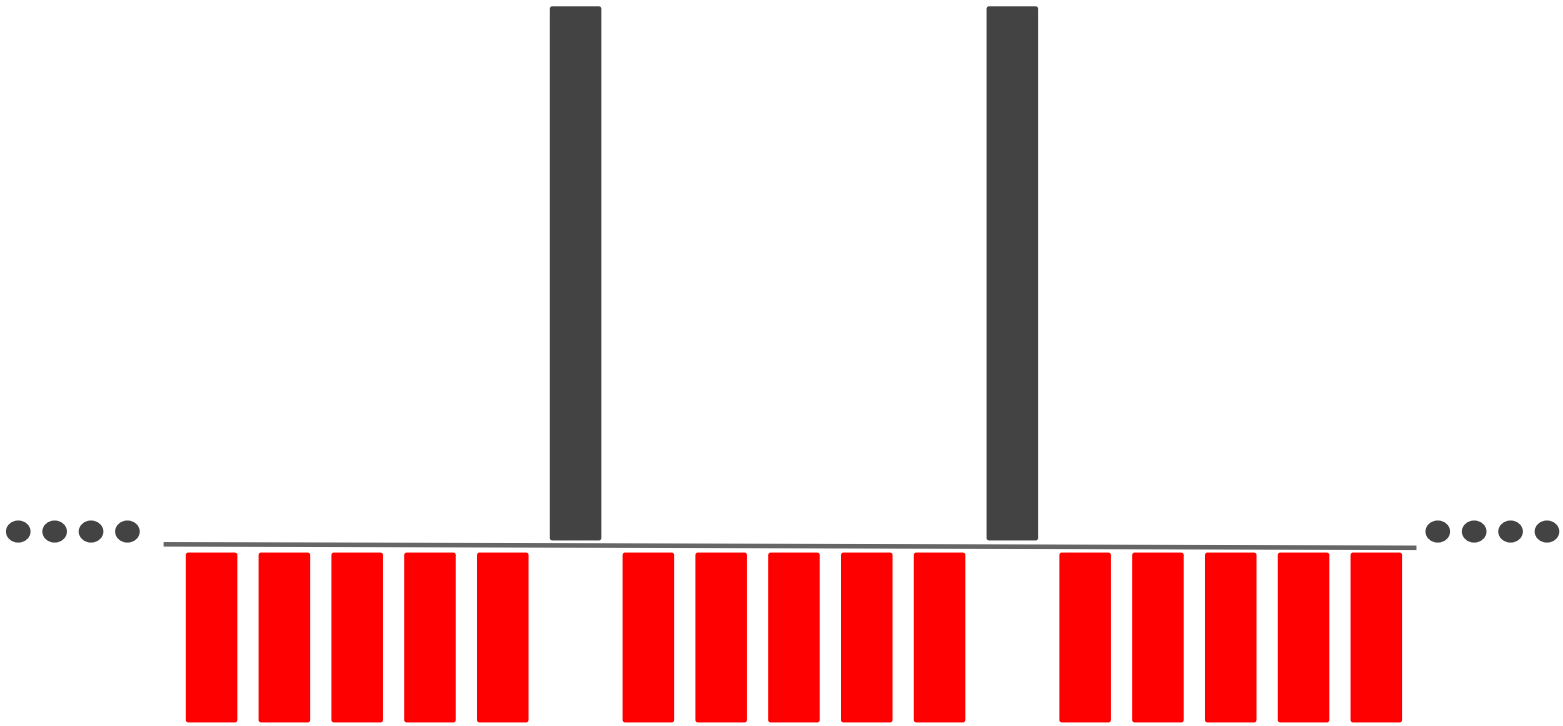
- Possible to accumulate resources through savings cycles

Aside: Credit Cycles



- Credit cycles change the timing of the large payouts

Credit Looks Like Savings



- Once cycle starts, savings and credit look the same.

Why are default rates so low?: Behavioral Explanations

Microfinance contracts make it "easy" for individuals to repay

- It may be hard to save the money! But microfinance rigid enough that I make repayments

Microfinance looks like a *commitment device*!

- Many borrowers use loans to make durable purchases
- Some even talk about borrowing to save (put lump sum into daughter's dowry etc.) (see Basu 2009)

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- Many borrowers use loans to make durable purchases
- Some even talk about borrowing to save (put lump sum into daughter's dowry etc.) (see Basu 2009)
- Standard notion is one of consumption credit – bringing consumption forward in time
- However, under time-inconsistency, individuals may never be able to follow through on a savings plan on their own.
  - Price of commitment = interest rate

Why are default rates so low?: Behavioral Explanations

Ingredients for microfinance as a commitment device:

- Demand for ongoing lump sum consumption
- Inability to save for the durable on own (because of say present bias)
- Microfinance structured enough to make missing a payment costly (or to lower the temptation or inattention costs)
- Existence of dynamic incentives!
  - Basically, no access to the arbitrage opportunity in absence of the MFI
- Theory: see Ghatak and Fischer (2014), Basu (2012)

Evidence

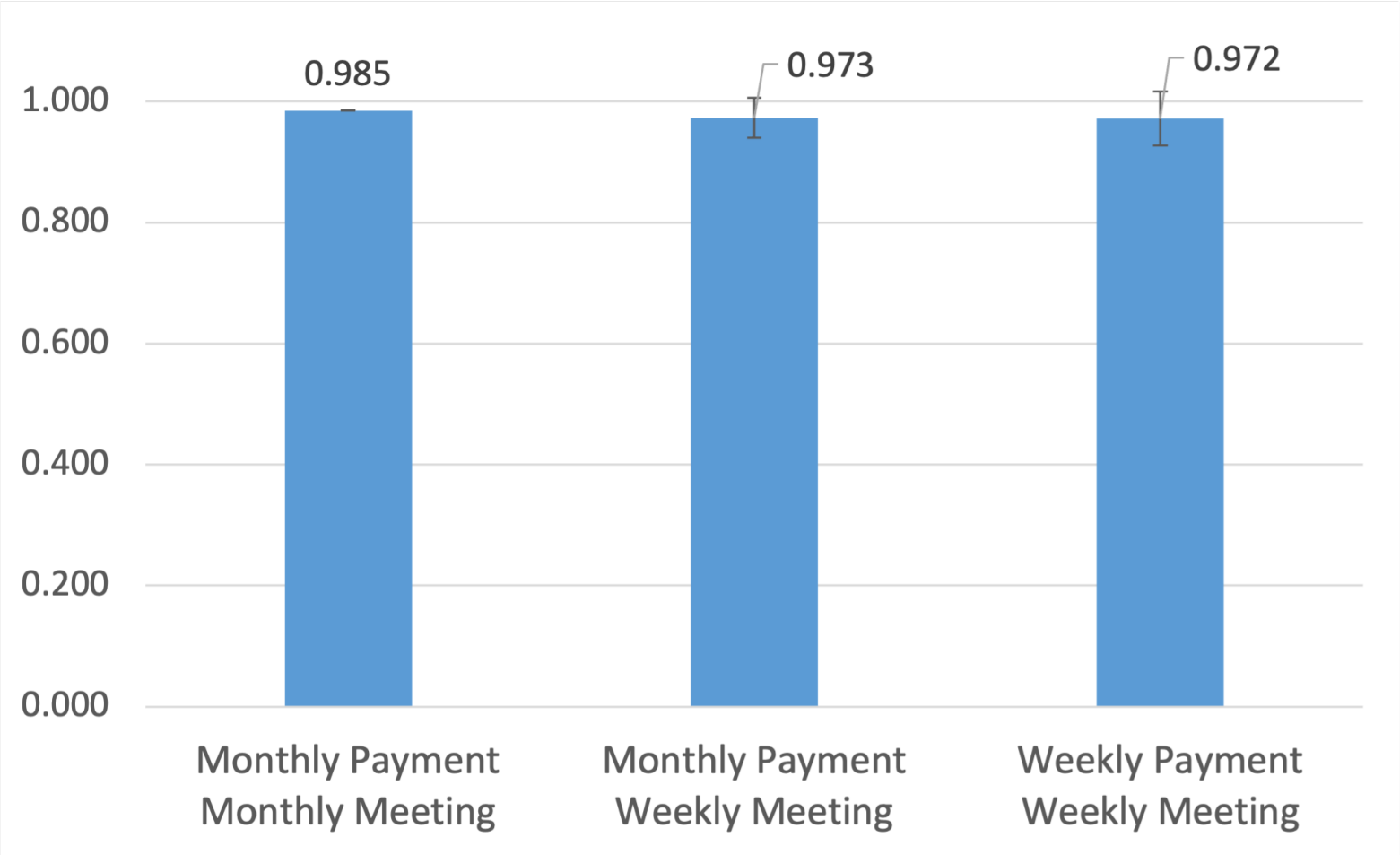
- Not as much as one might hope for
- Afzal et al (2017) "Two sides of the same rupee"
  - Offer a series of weekly maturity loan and savings products to same population
  - Large fraction of participants take up both loan and savings

Why are default rates so low?: Weekly repayments provide discipline

Does microfinance structure create discipline?

- Erica Field and Rohini Pande set up a study to test this (actually 2 studies) with an MFI in Kolkata (West Bengal, India).
- After joining the organization, 100 groups were randomized by public lottery into:
  - Regular (weekly) repayment schedule.
  - Monthly repayment schedule with monthly meetings.
  - Monthly repayment schedule with weekly meetings.

Proportion of Loans Fully Repaid within 56 Weeks



Makes commitment story less likely

- Unless monthly frequency contains all of the benefits of discipline already

Why are default rates so low?: Social Capital

Social capital a key component of many informal financial products predating microfinance

- For example, ROSCAs, Merry-go-rounds, Village Savings and Loan Associations, Self-Help Groups,...

Social component can help with screening

- Joint liability gives incentives to screen (Ghatak 1999 - assortative matching on risk)
  - Bryan, Karlan, Zinman (2015) find no evidence that individuals in South Africa refer better borrowers when incentivized on borrower performance
- Or simply homophily: bad types may be less likely to have friends who want microfinance. Could still serve a screening-type role from the perspective of the lender

Why are default rates so low?: Social Capital

Social component can also help with monitoring, and enforcement

- Explicit incentives to monitor (and punish) under joint liability
- Besley and Coate (1995) model of repayment incentives under joint liability
- Group members have access to punishment using social collateral
- Positive: Some individuals may cover for defaulters, increase repayment
- Negative: If enough members want to default – then the whole group defaults
- Bond and Rai (2009) "Borrower Runs" consider multiple equilibria in a global games framework
- May increase volatility of repayments

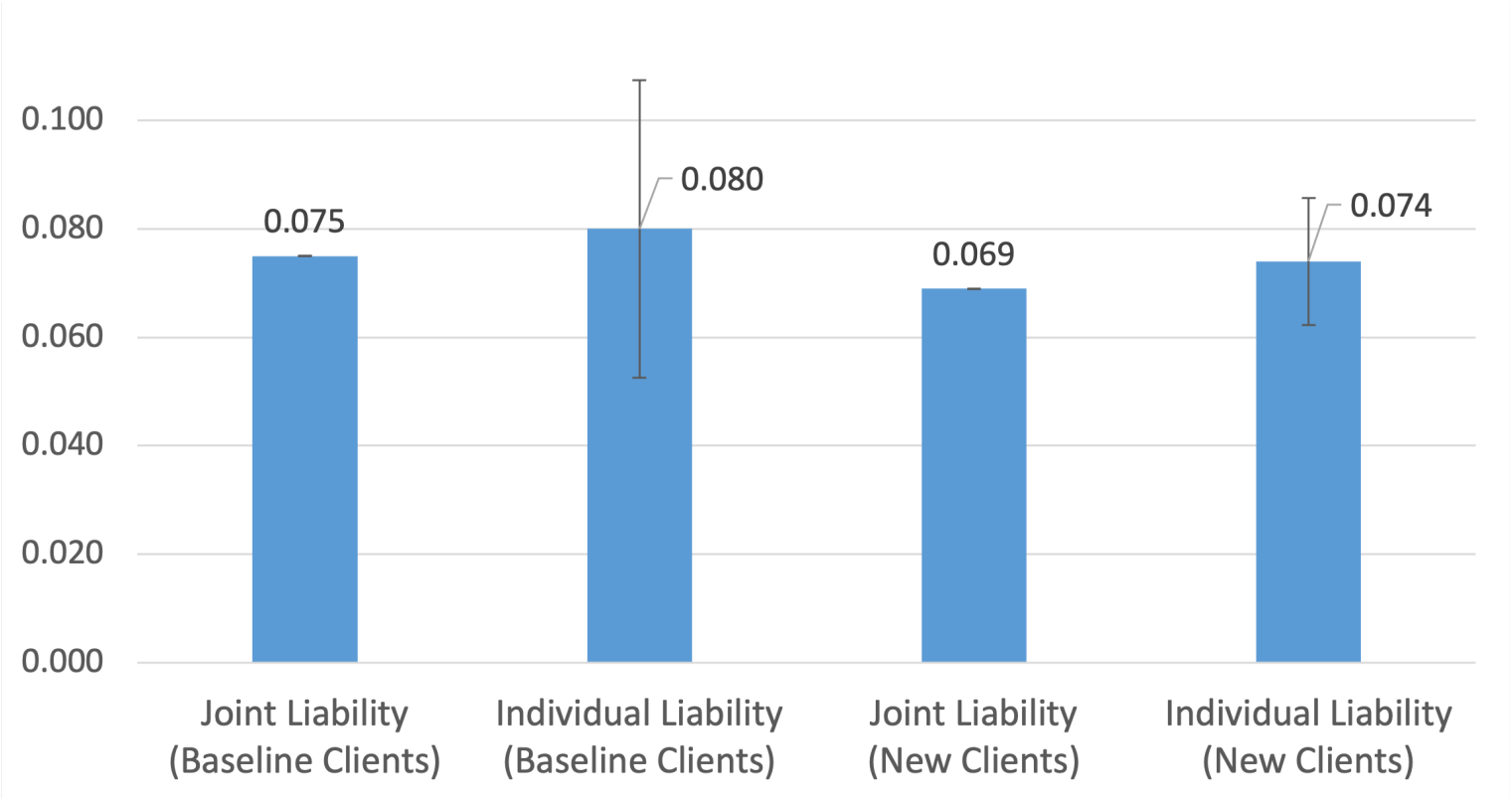
Bryan, Karlan, Zinman (2015) referrals experiment in S. Africa

- No evidence of advantageous peer screening
- But, when incentivized, strong enforcement effects

Why are default rates so low?: Social Capital

Gine and Karlan (2007) randomly relax joint liability:

- Outcome: Proportion of missed weeks



No evidence of increased defaults even for new clients (possibly adversely selected)

Why are default rates so low?: Social Capital

Theoretical focus on joint liability component, but...

- Broader industry-wide shift away from explicit joint liability without a drop in repayment (de Quidt et al 2014)
- Even without JL, reputational incentives may still foster better repayment behavior

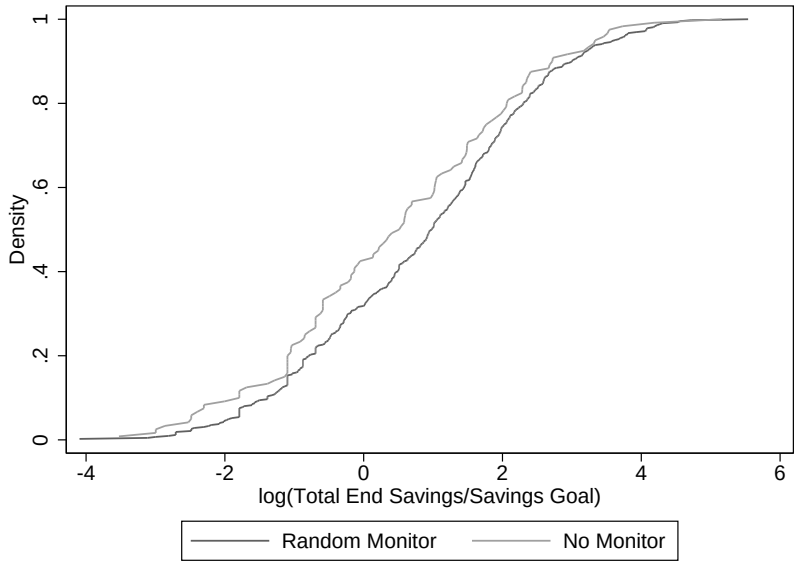
Why are default rates so low?: Social Capital

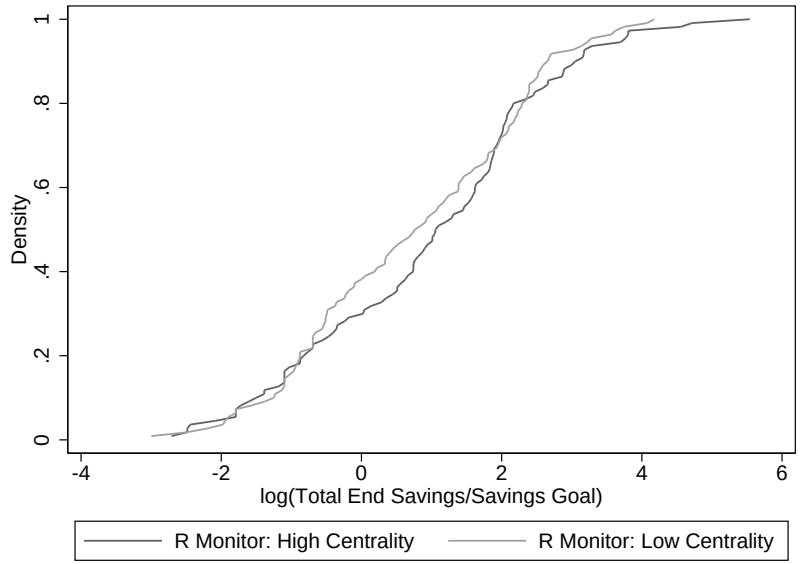
> *"the contributing member may admonish his partner for causing him or her discomfort and material loss. He might also report this behavior to others in the village, thus augmenting the admonishment felt. Such behavior is typical of the close-knit communities in some LDCs."*
>
> *– Besley and Coate (1995)*

Relevant empirical evidence pertaining to savings (Breza and Chandrasekhar 2018)

- Recruit villagers in India who express desire to save more
- Randomly assign monitor from same community to observe bi-weekly progress toward pre-set savings goal
- Do certain monitors have stronger effects than others?
  - Specific focus on central individuals who are more important for spreading information in the social network

Why are default rates so low?: Social Capital





- Higher savings across distribution w/ Monitor vs. No Monitor
- Monitor: Higher savings with High vs. Low Centrality Monitor
- Moreover, information about savings (+ive and -ive) spreads more through village with High Centrality Monitor
  - More potential for reputational consequences

Why are default rates so low?: Social Capital

Feigenberg, Field and Pande (2013) randomize weekly vs. monthly group meetings, no JL

- Find more altruism between borrowers who had been in weekly meetings
- More social interactions
- In next loan cycle, formerly weekly groups have lower defaults – suggestive evidence of being more willing to bail one another out?

Why are default rates so low?: Social Capital

Evidence from Breza (2014)

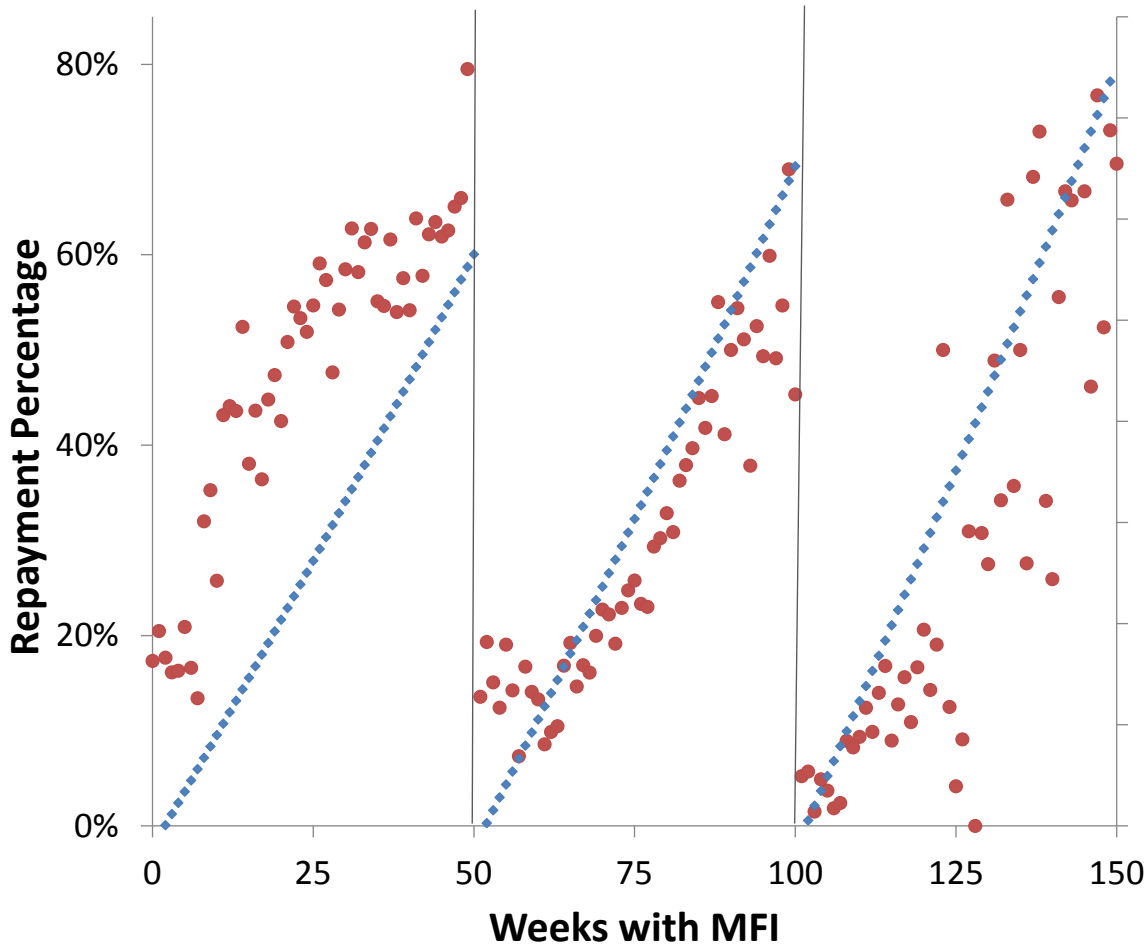
- Looks for peer effects in loan repayment
- Uses variation from a sudden and unexpected policy change banning microfinance in one district of Andhra Pradesh, India that was eventually reversed
- Lender policy
  - Repay the loan in as many installments as necessary, then become "regular"
  - Joint liability suspended: No contractual peer effects
  - No competition between MFIs after crisis

Identification Strategy

Idea

- Cyclical nature of loans. Fewer weeks remaining in the current cycle implies:
  - Lower repayment burden, smaller interest free loan
  - Next loan disbursement occurs sooner
- Staggered loan disbursements. Variation in the peer group's repayment incentives
- Separate sources of variation to identify both own and peer incentives
- No variation in week in cycle at the group level, but public repayment meetings aggregate 3-5 groups into centers. Centers have staggered timing.

Discontinuous Own Repayment Incentives



Effect of Peer Repayment on Own Repayment

IV Results

$$repay_i = \alpha + \gamma weeks_i + \beta \overline{repay}_{p(i)} + \eta X_{i,p(i)} + \varepsilon_i$$

	(1)	(2)	(3)
Village Repayment ex Group	0.109		
	(0.0920)		
Village Repayment ex Center		0.0244	
		(0.0809)	
Center Repayment ex Group		0.0960***	0.109***
		(0.0299)	(0.0334)
Week in Cycle	0.0105***	0.0100***	0.0101***
	(0.000380)	(0.000382)	(0.000382)
Individual and Peer Controls	Yes	Yes	Yes
Fixed Effects	Branch	Branch	Branch
Observations	107734	107734	107734
R-squared	0.304	0.325	0.321

- Center level repayment peer effect ~10%,
- Village ex center level repayment peer effect ~2.4%

Taking Stock

Evidence suggests:

- Women don't have higher returns (in fact, much lower)
- Dynamic incentives alone don't buy much
- No difference between weekly and monthly repayment, but still possible that monthly repayments + loan officer monitoring create incentives
  - Especially with gender power dynamic
  - Ability for loan officer to lean on other group members in the case of default
- Limited evidence of peer screening
- Little evidence that joint liability itself matters much
- But social capital and reputation may be important

Question Break

Scalability: Why are profits so high?

In addition to low defaults, microfinance contract structure economizes on many types of intermediation costs:

- Minimal screening
- Minimal personalization or customization – allows for simple record-keeping and accounting systems
- Simple performance metrics for employees, easy to design incentives
  - Origination (number of loans)
  - Default rates
- Does not require high levels of credit officer skill
- Minimal monitoring

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Costs are mainly fixed:

- Credit officer needs to be in the village every single week

Open research questions on MF mechanics?

Pretty crowded literature

- People have randomized every aspect of microfinance! (More examples to come)
- To me, a few open issues:
  - Loan officers – how much repayment is because of coercion? (Sometimes they don't leave the borrower's house until she has found money somehow)
    - This applies to moneylenders too
  - Relatedly, consumer protection and regulatory framework - we know very little

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Need for Rigorous Evidence

Early 2000's: Rise of RCT as a research method in economics:

- Excitement for Microfinance
- However, often proof by anecdote
- Belief that the poor are "natural born entrepreneurs" and that microfinance could be an engine for widespread business growth.
- Much discussion of social impact, women's empowerment

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Seven(!) RCTs launched by different researchers between 2005 and 2010:

- Range of countries: Ethiopia, India, Mexico, Morocco, Bosnia, Mongolia, Philippines
- Urban and Rural examples
- Group and individual loans

Need for Rigorous Evidence

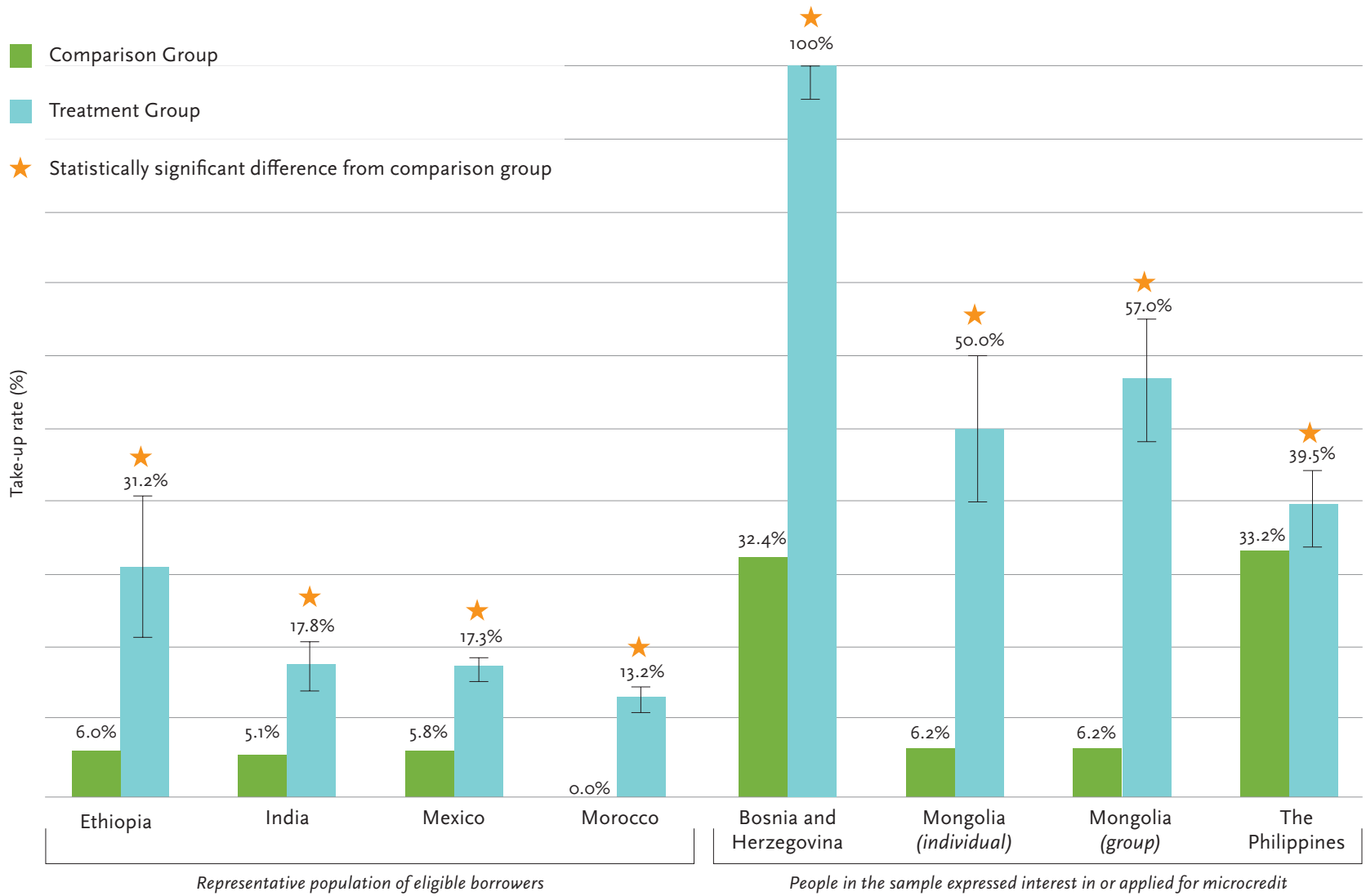
Two different randomization strategies:

1. Randomize expansion of lenders to new geographic areas
   - Researchers tell MFI where to go and where not to go
2. Randomize "at the bubble"
   - Take 2 loan applicants who are just barely credit worthy and randomize who gets a loan

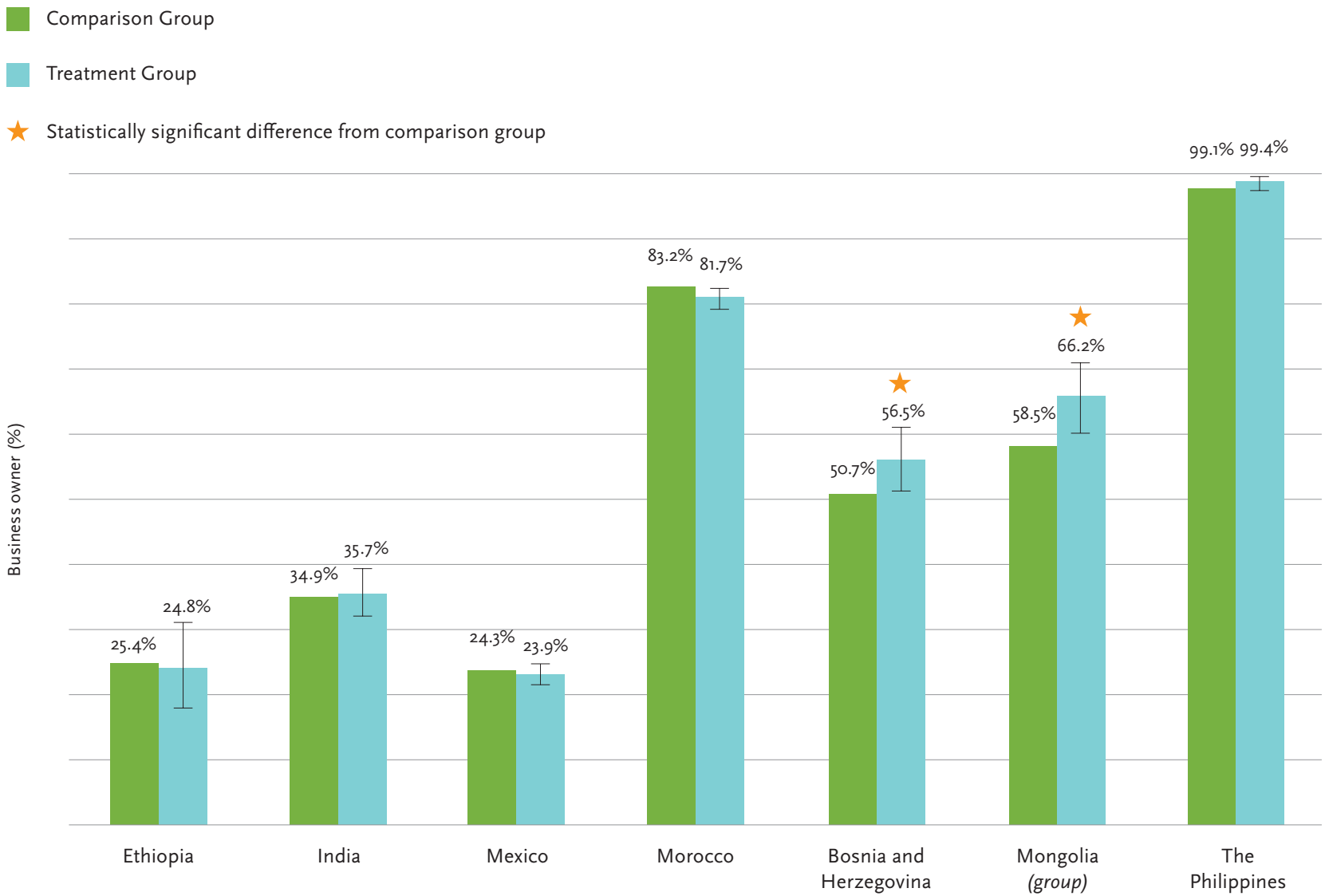
Studies primarily set up to measure causal impacts of microfinance on businesses

- Outcomes include business profits, revenues, inputs, consumption, asset accumulation, women's empowerment
- Outcomes measured 12-18 months after treatment
- Allows for measurement of benefits from investing the loan proceeds (i.e., entrepreneurship narrative)
- Some studies have longer-run follow-ups, 3-year outcomes.

Results: Take-Up



Results: Business Ownership



Results: Other Key Outcomes

Outcome	Bosnia and Herzegovina	Ethiopia	India	Mexico	Mongolia	Morocco	Philippines
Business ownership	↑	—	—	—	↑	—	—
Business revenue	—	—	—	↑	—	↑	—
Business inventory/assets	↑	*no data*	↑	*no data*	↑	↑	—
Business investment/costs	—	—	↑	↑	*no data*	↑	↓
Business profit	—	—	—	—	—	↑	—
Household income	—	—	—	—	—	—	—
Household spending/consumption	—	↓	—	↓	↑	—	—
Social well-being	—	—	—	↑	—	—	↓

Putting these Results Together

- Rachael Meager analyzed the results in a meta-analysis, still nothing on profits
- Studies designed to test idea that microfinance solves credit constraints, allows small businesses to thrive
- Some of the funds are used for businesses, but overall, no huge detectable impacts on incomes, profits
- Was a big disappointment to the practitioner and donor community

Borrowers must be spending the money, but 18 months later, can't see any lasting business or consumption benefits

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Demand for Finance

In principle, credit could be beneficial for three key reasons:

1. Business investment
2. Bringing lumpy consumption forward (savings vs. credit cycles)
3. Mitigating risks

MF findings:

- Modest impacts on 1, not transformational
- No test of 2, but possible given patterns of asset accumulation
- (Unreported results): null impacts on consumption variability.
  - MF contract structure ill-suited for this. Inflexible, immediate repayment, continuing cycles.

Scope for Any Transformative Impacts?

No smoking gun evidence for the average borrower:

- Short-run RCT evidence finds positive impacts on business investment, but no detectable impacts on profits, consumption.

Impacts likely heterogeneous for numerous reasons (Meager 2019).

- In Hyderabad, only 49.7% of MF borrowers have *any* business $\Longrightarrow$ many borrow for consumption, not business growth.
- MF may cause weaker businesses to enter
- MF loans might not be large enough to transform small businesses (e.g., still can't buy machines, vehicles, storefronts)

$\Rightarrow$ Investment impacts likely most relevant for:

- "Gung-ho" entrepreneurs (GEs), borrow to scale businesses
- We use a simple proxy: did household choose to enter entrepreneurship *before* microfinance was widely available?
- Can also look for evidence of a credit-based *poverty trap* for these businesses

Setting

We use the RCT variation from Banerjee et al. (2015)

- 104 neighborhoods of Hyderabad selected by Spandana in 2005
- Spandana entered 52 neighborhoods **(treatment)** in 2006
- Spandana entered remaining neighborhoods **(control)** in 2008
- Andhra Pradesh (AP) ordinance outlawed microfinance in 2010 $\implies$ all neighborhoods lost access

Surveys:

- (Partial) baseline in 2005
- Endlines in 2007 and 2010 (analyzed in Banerjee et al 2015)
- Longer-run endline in 2012, analyzed here.

Exposure to microfinance

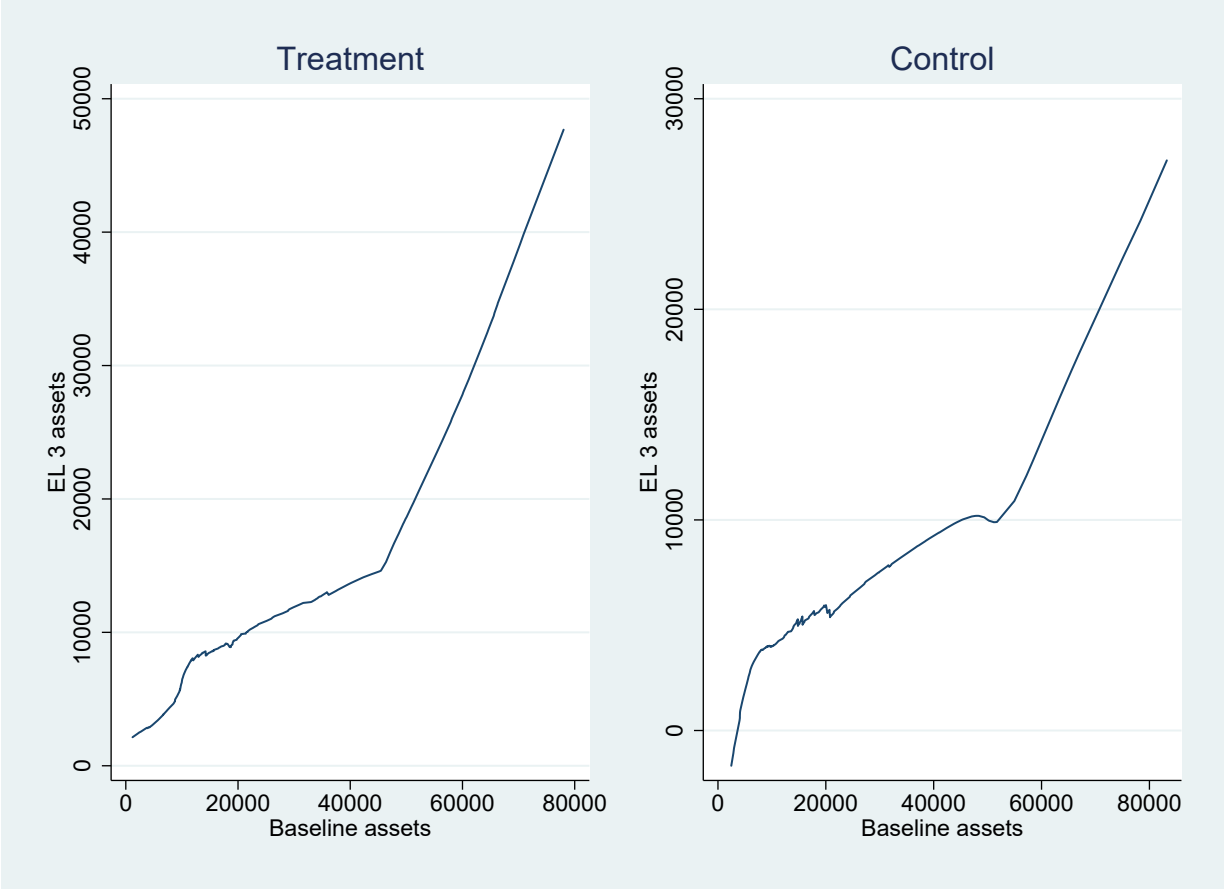
	(1) Borrowed from MFI in last 3 years (EL1 1)	(2) Borrowed from MFI between 2004-10	(3) Outstanding MFI loan (EL 2)	(4) Total MFI loan amt (EL2)	(5) Informal credit (EL3)
Panel A: Exposure to credit					
Treatment	0.109***	0.044*	0.008	946.417**	2668.157
	(0.022)	(0.024)	(0.020)	(474.365)	(3545.218)
Control Mean	0.256	0.498	0.332	6670.434	57151.686
Control Std. Dev.	0.436	0.500	0.471	13627.432	1.13e+05
Observations	6804	5467	6143	6143	5744
Panel B: Exposure to credit by entrepreneurial status					
Treatment	0.109***	0.036	0.003	677.234	-1683.957
	(0.021)	(0.026)	(0.021)	(508.180)	(4226.917)
Treatment × GE	-0.002	0.020	0.013	754.962	14085.007*
	(0.030)	(0.032)	(0.031)	(929.289)	(7387.176)
Gung-ho entrepreneur (GE)	0.163***	0.110***	0.093***	2557.957***	3647.067
	(0.023)	(0.022)	(0.020)	(671.712)	(5833.084)
Treatment + Treat × GE	0.107	0.057	0.016	1432.197	12401.050
P(Treat + Treat × GE ≠ 0)	0.001	0.091	0.617	0.102	0.046

Reduced form outcomes (EL3)

	(1) Has a business	(2) Total business assets	(3) Business profits	(4) Total wages paid	(5) Non-business durables
Panel A: Effects of credit					
Treatment	0.038*	1565.222***	576.774***	373.747***	351.696
	(0.020)	(426.789)	(179.375)	(133.018)	(239.737)
Control Mean	0.307	6680.551	2066.436	348.367	8482.853
Control Std. Dev.	0.461	20448.064	6039.441	4700.427	14264.700
Observations	5744	5744	5580	5736	5744
Panel B: Effects of credit by entrepreneurial status					
Treatment	0.024	816.198	263.906	275.264**	-175.322
	(0.018)	(526.966)	(168.567)	(118.604)	(323.643)
Treatment × GE	0.040	2325.597	1004.523**	311.864	1716.980**
	(0.028)	(1483.448)	(501.565)	(368.366)	(725.416)
Gung-ho entrepreneur (GE)	0.422***	8906.264***	3493.457***	488.639*	-513.234
	(0.020)	(973.087)	(350.655)	(266.816)	(563.800)
Treatment + Treat × GE	0.064	3141.795	1268.429	587.127	1541.658
P(Treat + Treat × GE ≠ 0)	0.008	0.011	0.004	0.093	0.007

Persistent effects of a "one-time" intervention...

Correlation BL ('05-06), EL ('12) assets



- Non-linear relationship (S-curve). Need to get past Rs. 50,000 to start growing quickly
- MF shifts min level of initial wealth assoc. w/ steep portion of curve down

Unpacking non-"GEs"

Recall that non-GEs in our RF results include:

- Consumption borrowers
- Entrepreneurs that began a business (18% do so by 2012 survey), in part, because of microfinance.

What kinds of businesses enter in response to MF?

- If scarce credit pre-MF is allocated to those with the highest marginal returns, then marginal entrant should have lower returns than incumbents.

We compare new businesses (< 1 yr old) created **at the same time**, but with differential access to MF:

- some prior to Spandana entry ("Gung-ho entrepreneurs")
- and others after Spandana entry ("Reluctant entrepreneurs")

We infer where Spandana would have opened early/late in control using matched pair randomization

Results: Type vs. experience

	(1) Workers in largest business	(2) Assets (stock)	(3) Log expenses	(4) Log revenue	(5) Profit (Rs.)	(6) Index of business variables
Panel A: Entered entrepreneurship post-2006, pre-Spandana (GEs)						
Treatment	0.212*	900.734	0.488	1.008*	2801.011**	0.148**
	(0.123)	(829.002)	(0.456)	(0.567)	(1293.561)	(0.066)
Control Mean	0.033	2100.623	6.758	7.093	1164.737	-0.106
Control Std. Dev.	0.181	3961.748	2.853	2.959	6351.331	0.321
Observations	133	119	130	128	128	133
Panel B: Entered entrepreneurship post-2006, post-Spandana (REs)						
Treatment	-0.288	-1500.608	-0.566	-1.007	-1400.672	-0.183
	(0.265)	(1159.788)	(0.648)	(0.823)	(1286.628)	(0.112)
Control Mean	0.242	2539.005	6.377	6.719	1785.719	-0.021
Control Std. Dev.	1.110	4850.283	3.402	3.591	6797.191	0.490
Observations	164	145	158	154	154	164

- Panel A: pure treatment effect on GEs
- Panel B: treatment effect + selection of REs $\Longrightarrow$ negative selection

Discussion

Two common views of entrepreneurship:

- "Gung-ho entrepreneur" theory
- Profitable business opportunities
- Scope for growth
- Relaxing credit constraints may jumpstart firm growth

vs. alternate view of "forced" entrepreneurship

- "Reluctant entrepreneur" theory
- Low profits
- Limited scope for growth
- Business may be a response to labor market frictions
- Relaxing credit constraints has limited value

Both types coexist in the population

Policy Implications

Borrowers are not monolithic, have heterogeneous goals:

- Credit as a way to finance entrepreneurship
- Credit as a way to consume sooner

Microfinance typically does not attempt to distinguish between these two groups.

- Screening technologies can be expensive
- Homogeneous contracts allow MFIs to economize on costs
- Contracts that limit risk-taking improve repayment

But that might lead MFIs to offer a product that is wrong for everybody

How could financial institutions do better?

What types of products might be better for:

- Gung-ho entrepreneurs
- Reluctant or non- entrepreneurs

One possibility:

- Larger, individual loans for the first group
- Improved savings technologies for the second

MFIs may not have incentives to segment this market (Roth 2017)

Question Break

Road Map

Next time:

1. What is Microfinance?
2. How Does Microfinance Work?
3. Does Microfinance Work:
   - For Everybody?
   - For Some?
4. How to Improve Microfinance?
   - Improved screening?
   - Innovations in contract design?
5. Aggregate Impacts of MF