Introduction to the Economics of Development

9. Are credit constraints constraining development?

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This week

- What is microfinance?
- What problem does it purport to solve? How might it solve the problem?
- Duflo et al. (2013): Microcredit RCT results.
- Meager (2019) combining evidence and Banerjee et al. (2024) heterogeneity analysis.
- Egger et al. (2023): Unconditional cash transfers and general equilibrium effects.

NB: This is a half week $\Rightarrow$ no quiz!

Credit markets intro

Credit markets

- Credit markets are the same as any other market.
  - The market for apples matches those who want apples with those who want to sell apples.
  - Money then solves the problem of conincident wants.

- Credit markets match those who want credit with those who want to give credit.
  - The medium of exchange is also money — interest rates.
  - Match between (a) those with money but without investment ideas/ time. And. (b) those without money but with investment ideas and time.
  - Misallocation: The wrong people might have the money + diminishing marginal returns.

- Some added complications relative to the apples market
  - Time-lags
  - Risk

- But credit markets are much more important than the market for apples.

Credit markets are more important than apple markets

Credit markets

Apple markets

- Seller sells an apple to a buyer
- Buyer consumes the apple
- Buyer is happy and seller is happy

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Credit markets

- Seller sells credit to a buyer
- Buyer uses credit to set up an apple business
- Business is successful and grows
- Business employs more people
- Business buys inputs (fertilizer, seeds) from other companies, and sells apples to many people
- Business pays back the loan with interest
- Seller (bank) is happy, buyer (entrepreneur) is happy, employees are happy, business customers are happy

Credit story is, however, risky

Credit markets in a low income setting

- Often fairly absent
- Very high interest rates in informal markets.
  - Money lenders in Pakistan: average annual interest rate of 78.5%.
- Extreme variable of interest rates within the same village/ town.
- The rich can obtain larger loans and pay lower rates.
- Those who borrow more typically pay lower interest rates.
- Rates of default are quite low.

Source: Poor Economics, Banerjee and Duflo (2011).

Why is lending to the poor difficult?

- Limited liability
  - Nothing to capitalise.
  - Even if you own property/ assets it can be hard to prove this (institutions).
  - If a borrower has no collateral a bank cannot recover a loan due to involuntary default.

- Limited enforcement.
  - If a borrower refuses to repay it can be hard to enforce (institutions).

- Making things worse: hard to enforce contracts (institutions).

A little bit of credit markets theory

key challenges

- Asymmetric information (lack of information)
  - Lenders don't know borrowers intrinsic quality
  - Lenders don't know borrowers actions

- This leads to two key issues...
  - Adverse selection. Only bad risks remain.
  - Moral hazard. If there are no consequences why would you be careful with the money.

How to overcome the main challenges

- Adverse selection
  - Screening — Credit ratings, bank interviews, detailed business plans, proven track record.

- Moral hazard
  - Monitoring, auditing, monetary/ legal consequences

Screening and monitoring are both costly

Existing technology to overcome these challenges: Local money lenders

Local money lenders are common in a developing setting. They overcome informational problems and the associated adverse selection/ moral hazard by leveraging local networks and knowledge.

- Know their clients/ family personally
- Can ask people in their network about the trustworthiness/ qualities of the borrower
- Can control more directly what the borrower does with the money
- Can refuse to lend money in the future if the borrower defaults
- If the borrower defaults can tell everyone in the community and prevent future loans with other money lenders

Results in low default rates (2%) but higher costs (79%) and so interest rates (79%). [Source Irfan Aleem (1990) Pakistan]

What is microfinance

Big idea: Combine benefits of local money lenders with benefits of bigger banks.

- Still for-profit organisations (mainly, or at least not loss making). Combine profits and social mission.
- Some microfinance organisations have been very successful: Compartamos (Mexico) and SKS Microfinance (India) raised 467m and 344m when they went public in 2007 and 2010
- Implementation
  - Group of borrowers
  - If one person defaults all others repay their loan
  - People only form groups with those they trust (screening)
  - People keep an eye on other members in the group (monitoring)
- As groups screen and monitor themselves costs are much lower $\Rightarrow$ interest rates are much lower

Summary

- Credit markets are very important
- Due to a lack of information and collateral costs of credit are much higher in a developing setting
- Microfinance companies leverage group lending to lower costs and provide cheaper loans
- Next step: This should stimulate the local economy, does it?
- Duflo, Banerjee, Glennerster and Kinnan (2013) take this up.
- In the 2000's and 2010's there was a lot of buzz around microcredit: Mohammad Yunus and the Grameen Bank were awarded the Nobel Prize for Peace (2006), for their contribution to the reduction in world poverty.

Does microfinance work?

Duflo et al. (2013)

"The miracle of microfinance? Evidence from a randomised control evaluation. (2013) "

Ill. Niklas Elmehed. © Nobel Media.

Abhijit Banerjee

Prize share: 1/3

Ill. Niklas Elmehed. © Nobel Media.

Esther Duflo

Prize share: 1/3

Ill. Niklas Elmehed. © Nobel Media.

Michael Kremer

Prize share: 1/3

(2019 Nobel)

The paper in a nutshell

- Question: Does the availability of microfinance improve outcomes?
- Method: Large scale RCT.
- The experiment: Randomise half of 104 slums in Hydrabad India to have a microfinance branch in 2005.
- Compare control and treated locations over 18 months and then 3-4 years after treatment.

What problem does the RCT solve?

Why can we not just compare the outcomes of those who use microfinace with those who don't?

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How about if have individual level panel data and control for individual fixed effects?

What problem does the RCT solve?

Why can we not just compare the outcomes of those who use microfinace with those who don't?

How about if have individual level panel data and control for individual fixed effects?

How about comparing villages with access to microfinance vs those villages who don't?

Ethics

Any potential ethical issues with the proposed RCT?

Theoretical framework

We will skip the formalisation and focus on the intuition.

- Individuals can buy consumption goods or invest in a “lumpy” asset.
- Availability of micro credit may allow individuals to switch from consumption to lumpy.
- If this happens what would an individuals consumption trajectory look like?

Theoretical framework

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- Individuals can buy consumption goods or invest in a "lumpy" asset.
- Availability of micro credit may allow individuals to switch from consumption to lumpy.
- If this happens what would an individuals consumption trajectory look like?
- Could decrease in the short run only to increase in the longer run.
- Insights from the model: It is important to look at long run impacts.

The setting and balance

Table 1: Baseline Characteristics

	Treatment	Control	Difference	Obs
PANEL A: Demographics	(1)	(2)	(3)	(4)
Household size	5.13	5.04	0.095	2,440
	[1.78]	[1.67]	(0.092)	
Household expenditure (Rs/mo)	5,485	5,208	277	2,440
	[4,820]	[4,224]	(232)	
Household owns home	0.676	0.674	0.002	2,435
			(0.040)	
Household rents home	0.288	0.272	0.016	2,435
			(0.034)	
School attendance (7-11 yrs old)	0.981	0.974	0.007	1,290
			(0.010)	
School attendance (12-15 yrs old)	0.853	0.856	-0.002	1,135
			(0.025)	
Working for a wage (Wage Labor /Job Work)	0.410	0.407	0.003	4,460
			(0.034)	
Business income (business owners only, Rs/mo)	3,265	3,393	-128	650
	[3,982]	[7,469]	(541)	
Total household income (Rs/mo)	4,921	4,825	96	2,440
	[4,818]	[5,861]	(293)	

Empirical strategy

- Spandana opened branches in 51/104 areas — the RCT.
- Other microfinance firms could start operations in any area.
- The RCT changes the probability that individuals in the areas use microfinance.
- It is not that the RCT forces everyone in treatment to use microfinance and everyone in the control to not.
- It is enough to just change the probability.

The first stage — the impact of the RCT on microfinance use

Table 3: Borrowing

	Borrows from:			
	Any MFI	Spandana	Informal lender	A bank
	(1)	(2)	(3)	(4)
Panel A: endine 1				
Treatment	0.088***	0.13***	-0.052**	0.0026
	(0.027)	(0.021)	(0.021)	(0.012)
Mean in control	0.18	0.052	0.76	0.079
Stdev in control	0.39	0.22	0.43	0.27
Nobs	6811	6811	6811	6811
Panel B: endine 2				
Treatment	0.0058	0.067***	0.0024	0.00042
	(0.030)	(0.020)	(0.018)	(0.0085)
Mean in control	0.33	0.11	0.6	0.073
Stdev in control	0.47	0.31	0.49	0.26
Obs	6142	6142	6142	6142

Estimating equation

Duflo et al. (2013) estimate equations of the form:

$$y_{ia} = \alpha + \beta \times Treat_{ia} + \gamma X_a + \varepsilon_i \quad (1)$$

Where:

- i denotes household, and a area
- y_{ia} is the outcome of individual i in area a
- $Treat_{ia}$ is an indicator which equals 1 if individual live in a treated area
- X_a are area-specific control variables
- ε_i is a random error term

Results: Consumption

Table 4: Consumption

	Monthly (per capita)		
	Total	Non durable	Tempt-ation goods
	(1)	(2)	(3)
Panel A: endine 1			
Treatment	10.1	-6.6	-8.73*
	(37.2)	(31.8)	(4.88)
Mean in control	1419.2	1304.8	83.9
Stdev in control	978.3	852.4	130.2
Nobs	6827	6781	6863
PANEL B: endline 2			
	-48.3	-44.9	-9.99
	(51.4)	(46.9)	(6.64)
	0.0054	0.0065	0.007
Mean in control	1914.3	1755.2	117.7
Stdev in control	1354.9	1209.5	182.4
Obs	6142	6142	6142

Results: Business creation

Table 5: Business Creation and outcomes (entire sample)

	in the last year				
	Started a business	Num. business started	Num. female business started	Closed a business	Value of business assets acquired
	(1)	(2)	(3)	(4)	(5)
Panel A: endine 1					
Treatment	0.0093	0.016**	0.015***	0.002	389*
	(0.0061)	(0.0075)	(0.0054)	(0.0076)	(212)
Mean in control	0.047	0.053	0.026	0.037	280
Stdev in control	0.21	0.25	0.17	0.19	4038
Nobs	6757	6757	6762	2352	6800
Panel B: endine 2					
Treatment	-0.00049	0.0023	-0.005	-0.00042	-134
	(0.010)	(0.013)	(0.0062)	(0.0064)	(208)
Mean in control	0.083	0.093	0.047	0.053	1007
Stdev in control	0.28	0.33	0.23	0.23	9623
Obs	6142	6142	6142	6142	6142

Results: Labor supply

Table 8: Labor supply

	Hours worked by head and spouse, total	Hours worked by head and spouse for wage	Hours worked by head and spouse, own business	Hours worked by children aged 9-17
	(1)	(2)	(3)	(4)
Panel A: endline 1				
Treatment	3.22**	0.44	2.78*	0.19
	(1.42)	(1.42)	(1.48)	(0.38)
Mean in control	57.8	32	25.8	3
Stdev in control	35.9	34.4	34.6	10.9
Nobs	6827	6827	6827	3880
Panel B: endline 2				
Treatment	1.07	-0.7	1.77	-0.12
	(1.18)	(1.48)	(1.58)	(0.30)
Mean in control	51.3	25.9	25.4	2.76
Stdev in control	35.4	31.4	33.4	9.83
Obs	6142	6142	6142	3570

Results: Social outcomes and women empowerment

Table 9: Social outcomes and women's empowerment

	Woman primary decision-maker	Woman primary decision-maker (non-food)	Woman primary decision-maker on loans	Child's major illness	Girls' education	Teenage boys' education	Index of social outcomes
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: endine 1							
Treatment	0.0071	0.021	0.014	-0.014	-0.046	-0.016	0.0071
	(0.034)	(0.032)	(0.017)	(0.016)	(0.034)	(0.034)	(0.023)
Mean in control	0.66	0.52	0.28	0.28	1.21	0.83	0.00
Stdev in control	0.47	0.50	0.40	0.45	0.84	0.64	0.46
Nobs	6855	6855	6033	3943	4062	1971	6862
Panel B: endine 2							
Treatment	0.012	-0.009	0.0037	-0.00033	0.04	0.023	-0.0089
	(0.024)	(0.023)	(0.017)	(0.012)	(0.033)	(0.032)	(0.020)
Mean in control	0.61	0.50	0.35	0.39	1.2	0.85	0.00
Stdev in control	0.49	0.50	0.41	0.49	0.82	0.63	0.52
Obs	6142	6142	5562	5942	3592	1776	6142

Results: summary

- No change in consumption
- No change in social outcomes or women empowerment
- Small change in business related work
- Maybe more likely to own multiple businesses
- Bottom line: Not transformative at all.

Why little impact? Duflo et al. highlight low profitability of businesses in this area. With 24% interest rate, the costs are still too high.

External validity

- Duflo et al compare their results with similar experiments and find similar take aways.

- Meager (2019) combines evidence on microfinance loans in a more systematic way.
  - Meager (2019) uses Bayesian analysis.
  - Start with some prior of the effect and update this with new information, update more if the new information is very certain.
  - Find: "he impact on household business and consumption variables is unlikely to be transformative and may be negligible"

- Banerjee et al. (2024) look at heterogeneous effects.
  - They find that some households have long lasting large effects — 35% more assets after 6 years
  - Call these "gung-ho" entrepreneurs
  - Conclude that for some ($\sim$30%) talented/ motivated individuals short-term access to credit can let them escape a poverty trap

Summary of microcredit

- Well functioning credit markets are crucial to a well functioning economy.
- In a developing context information frictions lead to problems of adverse selection and moral hazard which cause interest rates to be crazy high.
- Microcredit in principle could solve this problem by using group lending.
- Lots of hype in the 2000's and early 2010's
- Duflo et al. (2013), Meager (2019), and Banerjee et al. (2024) as well as various others show using evidence from RCTs that...
  - Microcredit is not transformative
  - But it might allow an entrepreneurial part of the population to escape poverty
  - One issue is that loans remain relatively expensive $\sim$ 25% interest
- Alternative: Just give cash.

Unconditional cash transfers, scaling up and multiplier effects

Unconditional cash transfers

- Instead of loaning money you give it.
- Unconditional as there are no stipulations on what the receiver has to do with the money.
- The idea is that people know best what to do with the money, so we should let them do that.
- Little evidence that the cash is frittered away on temptation goods.
- GiveDirectly is one of the largest unconditional cash transfer programs and have given over 852m USD.

Quick overview of the evidence on unconditional cash transfers

- Haushofer and Shapiro (2016). Large increases in consumption and psychological well-being in the short run.
- Bastagli et al. (2018). Meta study of 165 studies. Find that UCT in general improve outcomes on six dimensions monetary poverty; education; health and nutrition; savings, investment and production; work; and empowerment. Find little impact of unintended consequences such as potential reductions in adult work effort and increased fertility.
- Blattman et al. (2020). 4 years after cash was given to youths in Uganda they find that grants raised work by 17 percent and earnings by 38 percent. However, after 9 years the gains have dissipated.
- GiveDirectly itself collates research and finds...
  - Despite the stereotypes, recipients of cash do not systematically waste or misuse it.
  - Recipients of cash typically end up less poor and put cash towards improving different aspects of their lives.
  - Cash can help drive a range of important, positive changes in people's lives.

Large effects in the short run, but the jury is still out on longer run impacts.

What about scaling up?

- We have considered microfinance and cash transfers at the individual level.
- At least in the latter, at least in the short/ medium run, there are quite large positive effects.
- So policymakers might be inclined to scale-up the intervention.
- But behavior at scale may differ from that at the individual level.
- Now people have more money, so they will spend more, prices rise but so does aggregate demand. Could be positive or negative.
- Studying this experimentally is difficult... and expensive

Egger et al. 2022

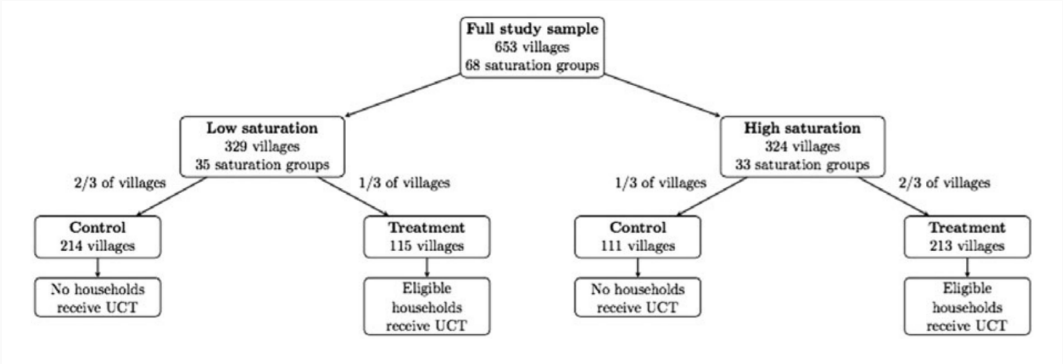
- The experiment: give one-time cash transfers of 1000 USD to 10,500 poor households across 653 randomly chosen villages in rural Kenya, 1,000 USD is 75% of mean household income among recipients.
  - Only poor households within each village were eligable for the transfer.
- Fiscal shock equal to 15 percent of local GDP.
- Overall cost 10.5m USD (at least).
- Shock is large enough to allow us to study, experimentally, general equilibrium scale effects.
- Ethics?

Identifying spillovers across space

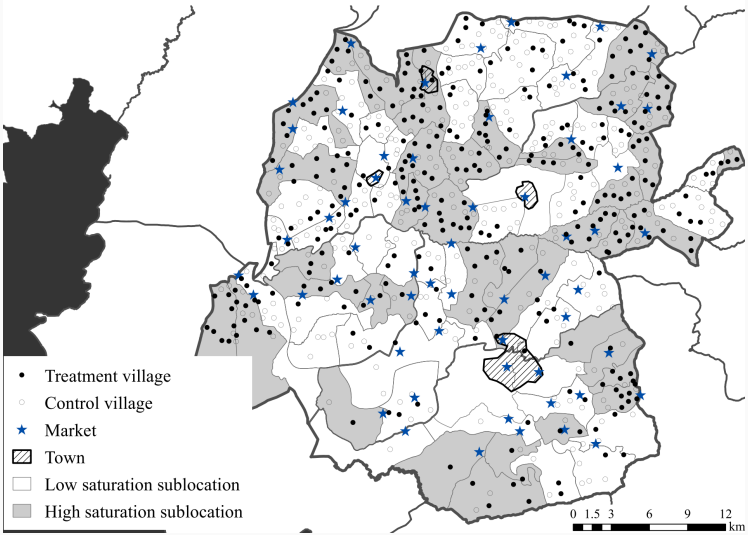
- How would you identify GE effects/ spillovers with an experimental design?

Identifying spillovers across space

- How would you identify GE effects/ spillovers with an experimental design?
- Egger et al. randomise at two levels
  - Village
  - Village cluster (low saturation vs high saturation)



On a map (Siaya County Kenya)



Study design

- Pop "what does that identify" quiz:
  - Comparing treated and control households within the same village (not possible with Egger et al. design)
  - Comparing treated households in treated villages and control households in control villages within the same village cluster
  - Comparing treated households in treated villages in high concentration village clusters with treated households in control villages in low concentration village clusters

Why might there be spillovers?

Household A is given money they...

- Spend it! Boosting business B's income.
  - Business B then uses the money to hire household C
    - Household C uses wage increases to buy goods from business D etc etc
- Prices might rise
- Behavior may change

First channel is "good" and called the fiscal multiplier.

Estimating household level effects

Estimating equation:

$$y_{iv} = \alpha + \beta \text{Amt}_v + \beta_2 \text{Amt}^{-}_{v,2} + \varepsilon_{iv}$$

Where Amt_v is the amount transferred within village v and $\text{Amt}^{-}_{v,2}$ is the amount transferred in villages within 2km of v, not including village v.

Let's think about endogeneity.

Endogeneity

$$y_{iv} = \alpha + \beta \text{Amt}_v + \beta_2 \text{Amt}^{-}_{v,2} + \varepsilon_{iv}$$

- Is Amt_v endogenous?
- Is $\text{Amt}^{-}_{v,2}$ endogenous?

Endogeneity — solution: Instruments

$$y_{iv} = \alpha + \beta \text{Amt}_v + \beta_2 \text{Amt}^{-}_{v,2} + \varepsilon_{iv}$$

- What is a suitable IV for Amt_v?

- What is a suitable IV for $\text{Amt}^{-}_{v,2}$?

Endogeneity — solution: Instruments

$$y_{iv} = \alpha + \beta \text{Amt}_v + \beta_2 \text{Amt}^{-}_{v,2} + \varepsilon_{iv}$$

- What is a suitable IV for Amt_v?
  - Treat_v whether or not the village was treated.

- What is a suitable IV for $\text{Amt}^{-}_{v,2}$?
  - $s^e_{v,2}$ the share of eligible households within 2km assigned to treatment.

Interpreting coefficients

$$y_{iv} = \alpha + \beta \text{Amt}_v + \beta_2 \text{Amt}^{-}_{v,2} + \varepsilon_{iv}$$

Interpreting coefficients

$$y_{iv} = \alpha + \beta \text{Amt}_v + \beta_2 \text{Amt}^{-}_{v,2} + \varepsilon_{iv}$$

- β is the impact of within-village transfers conditional on the wider economy.
- β_2 is the impact of transfers to the wider economy conditional on the within-village environment.

What is the control group?

How do these interpretations change if the transfers affected all villages in the study area to some extent?

Results

TABLE I

EXPENDITURES, SAVINGS AND INCOME.

	(1)	(2)	(3)	(4)
	Recipient Households		Non-Recipient Households	
	𝟙(Treat Village) Reduced Form	Total Effect IV	Total Effect IV	Control, Low-Saturation Mean (SD)
Panel A: Expenditure				
Household expenditure, annualized	293.59	338.57	334.77	2536.01
	(60.11)	(109.38)	(123.20)	(1933.51)
Non-durable expenditure, annualized	187.65	227.20	317.62	2470.69
	(58.59)	(99.63)	(119.76)	(1877.23)
Food expenditure, annualized	72.04	133.84	133.30	1578.05
	(36.96)	(63.99)	(58.56)	(1072.00)
Temptation goods expenditure, annualized	6.55	5.91	−0.68	37.07
	(5.79)	(8.82)	(6.50)	(123.54)
Durable expenditure, annualized	95.09	109.01	8.44	59.41
	(12.64)	(20.24)	(12.50)	(230.83)
Panel B: Assets				
Assets (non-land, non-house), net borrowing	178.78	183.38	133.06	1131.66
	(24.66)	(44.26)	(78.33)	(1419.70)
Housing value	376.92	477.29	80.65	2032.11
	(26.37)	(38.80)	(215.81)	(5028.27)
Land value	51.28	158.47	544.85	5030.03
	(186.22)	(260.91)	(459.57)	(6604.66)
Panel C: Household balance sheet				
Household income, annualized	79.43	135.70	224.96	1023.36
	(43.80)	(92.10)	(85.98)	(1634.02)
Net value of household transfers received, annualized	−1.68	−7.43	8.85	130.08
	(6.81)	(13.06)	(19.11)	(263.65)
Tax paid, annualized	1.94	−0.09	1.68	16.92
	(1.28)	(2.02)	(2.02)	(36.50)
Profits (ag & non-ag), annualized	26.24	35.85	36.37	485.56
	(23.67)	(47.66)	(44.88)	(786.92)
Wage earnings, annualized	42.43	73.66	182.63	494.95
	(32.23)	(60.82)	(65.53)	(1231.12)

Why do non-recipient households see consumption gains

- Note timing: survey is a year after the transfer
- Non-recipient households are also richer — perhaps more able to capitalise on the extra money floating around
- Egger et al. find that non-recipient households have considerably higher wage income.
- Note: Egger et al. find little/ no impact on prices — so changes are *real*.

What is the multiplier?

- For every dollar given how much economic activity does it stimulate.

- Multiplier > 1 implies that you get more bang for your buck. A multiplier < 0 implies that price effects etc are so dominant that you have no gains.

- Egger et al. find a multiplier of 2.58

Summary of Egger et al.

- Large scale cash-transfer program shocking an area of Kenya by 15% or so of GDP.
- Find large positive effects on treated households, as expected.
- Find impacts vary by the amount of cash distributed locally, and that non-recipient households experienced a similarly positive effect.
- Estimate little to no price effects.
- Estimate a fiscal multiplier of 2.58
- Conclude: Scale maybe important, the bigger the intervention the more bang for your buck?

Summary

Microcredit summary

- Poorly functioning credit markets are a potential impediment to development.
- Microcredit promises to solve this by combining local knowledge with big-bank money.
- Results on the effectiveness of microcredit are however mixed at best.
- Direct unconditional cash transfers are a potential alternative.
- Large direct impacts have been found, and when attempted at scale we have evidence for positive multiplier effects.

The question

Are credit constraints constraining development?