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Risk, insurance and credit

Introduction

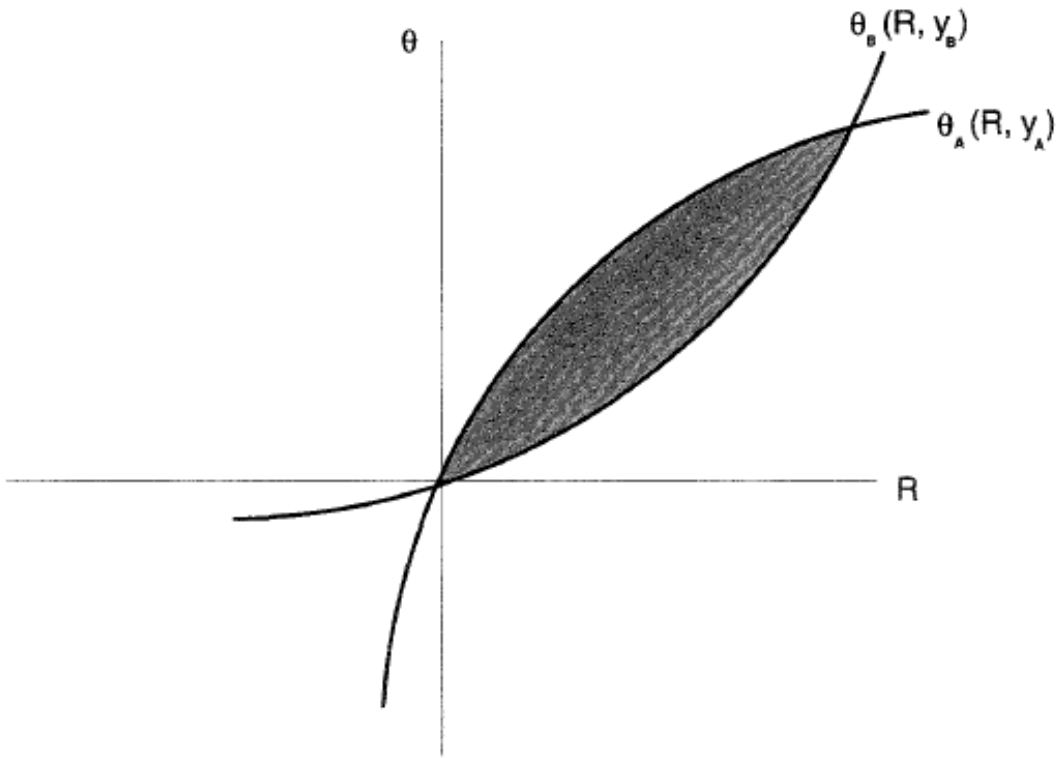
The role of credit and insurance in the development process

- Why are credit and insurance so fundamental?
  - Lags between input and output (agriculture).
  - Lags between investment and return to investment (education, firm expansion).
  - Uncertainty in the real world, and people are risk averse.

Insurance as trade

- An example from Besley (1995)
  - 2 identical individuals, A and B, living for two periods with uncertain incomes.
  - In period 1 they each receive an income draw (y_A, y_B).
  - They expect their income draw in period 2 to be the average receeived by the two in period 1, Y.
  - Individual A can make a payment of θ to B in period 1, followed by a repayment of R in period 2.
- Expected utilities (concave, additively separable):
  - $V_A(\theta, R) = u(y_A - \theta) + \delta E[u(Y + R)]$
  - $V_B(\theta, R) = u(y_B + \theta) + \delta E[u(Y - R)]$

Introduction



$$V_A(\theta_A, R) = u(y_A - \theta_A(R, y_A)) + \delta Eu(Y+R) \equiv V_A(0,0)$$

$$V_B(\theta_B, R) = u(y_B + \theta_B(R, y_B)) + \delta Eu(Y-R) \equiv V_B(0,0)$$

Introduction

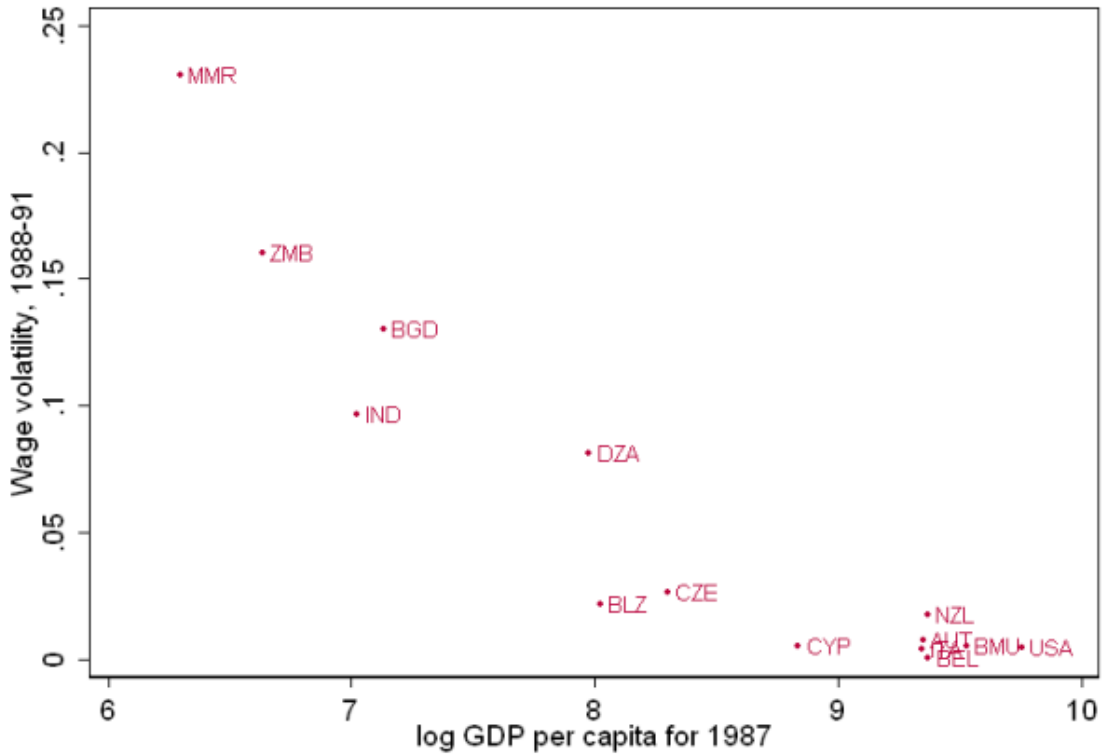
- The shaded area corresponds to contracts that are preferable to autarky (no transaction) for both individuals.
- It shows how concave preferences lead two individuals to prefer engaging in a simple insurance mechanism.
  - The luckiest individual in period 1 lends an amount (with interest) to the unluckiest one in period 2.
- The Arrow-Debreu general equilibrium:
  - Initial GE assumed no risk.
  - Extensions to risk using contingent commodities.
    - Contingent commodities: by introducing securities, perfect markets optimally allocate even under insecurity (Arrow, 1953).

DC markets and risk sharing

- While securities are not massively used to deal with uncertainty, neither in developing nor in developed countries, other mechanisms of risk sharing exist.
- Formal and informal.
- Are they close to insuring against all risk?
- How efficient is such risk sharing?

The developing world is a risky environment

Figure 1: Agricultural Wage Volatility Versus Gross Domestic Product



Source: Jayachandran (2006)

The joint problem of risk and poverty (Ravallion, 1988)

- The welfare of households is given by: $y = \phi(x, \eta)$
- Say η is a random variable affecting well-being of households.
- x is the invariant part of income for each household.
- General poverty in a society is a function of η: $P(\eta)$.
  - If $P(\eta)$ is a convex function, increasing risk leads to increasing poverty.
  - Ravallion shows that this is the case for the Atkinson class of poverty measures.
  - Using a simple poverty headcount, however, the result holds only if the poverty line is below median income.
- **Intuition:** if the poverty line is below median income, with reduced income fluctuations less of the most frequent households will occasionally fall below the poverty line.

Risk sharing in rural markets

Formal insurance—partial risk

- Aims at providing coverage against a one-dimensional risk.
  - Yield on a crop.
  - The price of a cash crop.
  - Death insurance (payment of a capital in case of a relative's death).
- When will insurance markets flourish?
  - Differences in risk aversion (and ability to support risk) makes trade beneficial in principle.
  - A risk averse individual will always want to by income insurance at an actuarially fair price (Arrow, 1963).
  - Little applicability in settings where markets are imperfect.

Risk sharing in rural markets

Formal insurance—partial risk

- Consider a farmer with two plots of land, cultivating two crops, and where the incomes from each crop are perfectly negatively correlated.
  - Sowing each crop on half the land eliminates risk.
  - Insuring against failure in one of the crops actually increases risk! (volatility in income)
- Demand for partial risk is not automatic—depends on preferences.
  - Uncertainty about yield, and uncertainty about price. If insurance is available for one of the two, will there be demand for insurance?

Risk sharing in rural markets

Formal insurance—partial risk

- Suppose an individual with income $y = x + w$ (Besley, 1995)
- Suppose also that insurance is available for x, but not for w.
- Demand exists when: $E_w v(w + X) > E_{x,w} v(w + x)$
  - For this to occur: utility functions must be concave.
  - w and x also need to be independent, and $v()$ must display decreasing absolute risk aversion.
  - The latter means that the wish to "gamble" increases in wealth.

Risk sharing in rural markets

Formal insurance—partial risk

- The restrictions on the functional form of utility do not seem overly prohibitive. So why are there not flourishing insurance markets in rural areas of developing countries?

  1. Moral hazard and adverse selection
  2. Credit constraints
  3. The government may not be able to commit *not* to cover risk.
  4. Information problems/transaction costs.

Risk sharing in rural markets

Information asymmetries

- Hidden information $\rightarrow$ **Adverse selection (AS) –** a situation in which buyers (sellers) have more information than sellers (buyers) prior to purchase and the sellers (buyers) risk engaging with risky buyers (sellers).
- Hidden action $\rightarrow$ **Moral hazard (MH) –** the possibility that agents, once isolated (or compensated) from risk behave differently than when exposed to risk.

$\Longrightarrow$ **Transaction costs (TC)** : all the costs needed for the realization of a transaction.

- AS and MH induce **selection**, **monitoring** and **enforcement** costs.
- Transactions do not occur or are suboptimal (Pareto).

Adverse selection (1/3)

Let us consider a lender that faces two potential investors

A is of the risky-type – He faces two options :

- He invests
  - Probability of success p_r
  - Net return : R_r in case of success, 0 if not.
- He does not invest and earns a wage w

B is of the secure-type – He faces two options

- He invests
  - Probability of success p_s
  - Net return : R_s in case of success, 0 if not.
- He does not invest and earns a wage w

Adverse selection (2/3)

- Further assumptions
  1. $p_r < p_s$
  2. $R_r > R_s$
  3. $p_r R_r = p_s R_s = R^\star$ (expected return)
  4. ρ is the cost of capital
- The two projects are socially profitable, i.e. $R^\star - \rho > w$
- At equilibrium : the lender chooses an interest r such that $rp^\star = \rho$
- $p^\star$ is the probability of a project being successful averaged over the two borrowers (the bank does not observe the 'type' of borrower)

Adverse selection (3/3)

- At this interest r : the secure-type borrower (B) gets a lower expected return than the risky-type one:

  $R^\star - rp_s < R^\star - rp_r$

- There may even be situations where only the risky-type borrower gains from investing :

  $R^\star - rp_r > w$, but $R^\star - rp_s < w$

- More (or only) borrowers of the risky type : lender increases r to equalize $rp^\star = \rho \longrightarrow$ up to a rate at which only risky-type projects are selected $\Rightarrow$ **Adverse selection**.

Risk sharing in rural markets

Moral hazard (Pauly, 1968)

- Individuals under insurance coverage treat prices as zero.
- Providing free insurance, or compulsory insurance, therefore leads to inefficient outcomes.
- Pauly (1968): Suppose an individual subject to three possible states of the world:
  - 1. Good health (I_1), with probability $1/2$.
  - 2. Light sickness (I_2), with probability $1/4$.
  - 3. Serious sickness (I_3), with probability $1/4$.
- A "good citizen" only consumes the medical care needed to treat his/her condition. There is thus a perfectly inelastic demand curve for each state of the world (D_1,D_2,D_3).

Risk sharing in rural markets

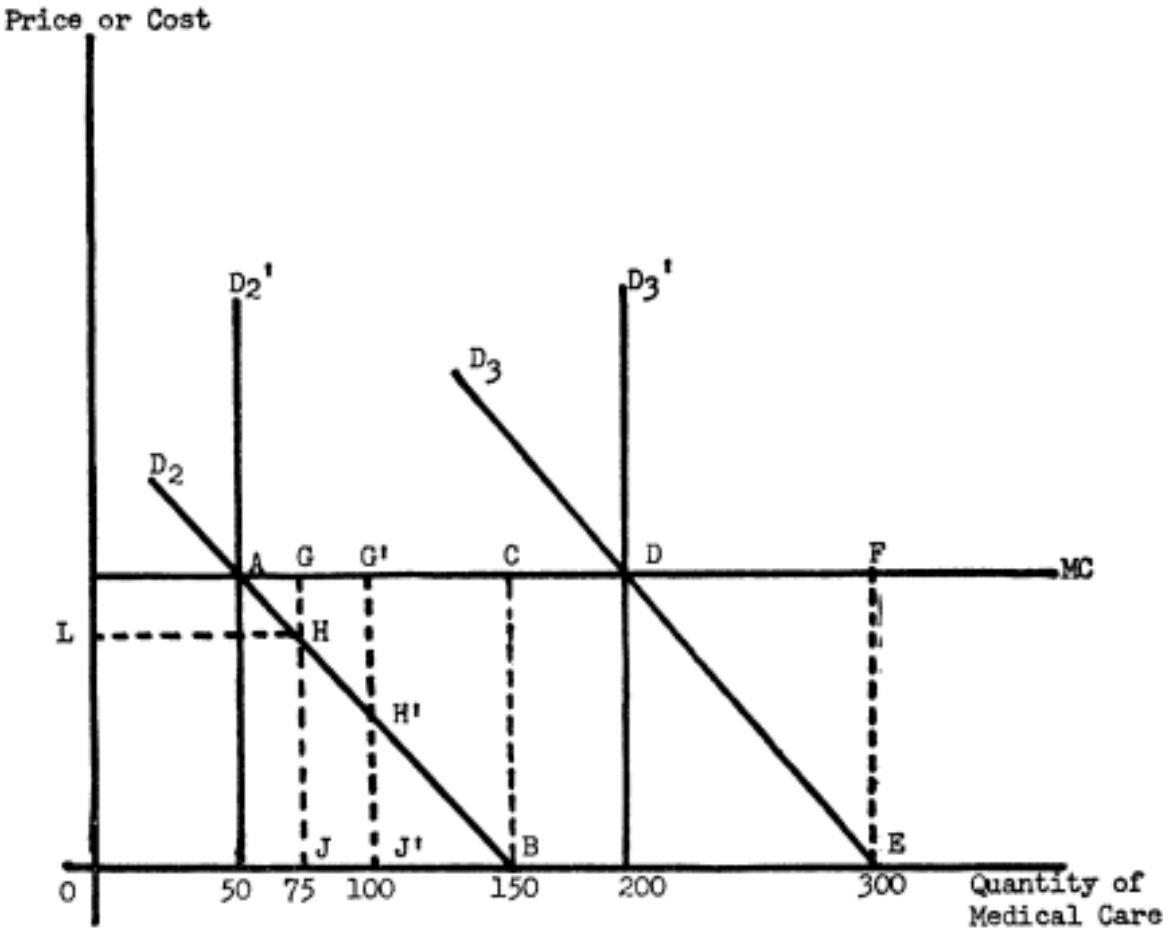


FIGURE 1

Source: Pauly (1968)

Risk sharing in rural markets

- Suppose that care for light sickness needs 50 units of medical care (at marginal cost), and care for serious sickness requires 200 units.
- If all citizens are good citizens, the actuarially fair insurance premium is 62.5 ($0.5 \times 0 + 0.25 \times 50 + 0.25 \times 200$) units of care.
  - Arrow: A rational individual will always prefer paying the 62.5 units rather than face the risk distribution.
- But, no guarantee that people have perfectly inelastic demand curves.
  - Instead, they might have demand curves D_2, D_3.
  - This leads to demands for 150 and 300 units respectively under scenarios I_2 and I_3.
  - The actuarially fair premium is now 112.5.
  - $\Rightarrow$ Moral hazard leads to market failure, and compulsory insurance leads to inefficient outcomes.

Risk sharing in rural markets

Credit/income constraints

- It may be rational to insure, but the cost may be prohibitive.
- Without a credit market (not even an informal one), no *trade* occurs.
- Has been sold as a rationale for *micro-insurance*.

Commitment problems

- Individuals may believe that the government will step in when systematic shocks occur (Hurricanes, Flooding, Volcanic activity).
- Linked to stages of development and history of intervention.

Risk sharing in rural markets

Transaction costs

- Small contracts, little benefit.
- Costly to assess damage at the individual level.
- Monitoring costs can solve this, but are often prohibitive for small-scale farming.

Risk-sharing in rural markets

Towards a microinsurance revolution? (Morduch 2006)

- Problems on the insurance market and on the credit market look very much alike.

  $\Rightarrow$ is it possible to find ways to sell small-scale insurance to low-income clients, profitably and on a wide scale?
- We still have much to learn about insurance markets, and their constraints (e.g. behavioral economics on time preferences).
- There are emerging new products:
  - Credit life insurance;
  - (Health insurance);
  - Weather insurance.

Risk-sharing in rural markets

Life insurance

- Typical insurance problems : MH and AS are not important issues and verifying the loss is straightforward
- Yet, not provided by private companies – Could it work for the poor?
  - Informal community arrangements: cf. burial societies in Cochin, India (Rutherford 2000) or Iddirs in Ethiopia.
  - Small amounts collected every week at some regular occasion $\rightarrow$ easier than bigger amounts once in a while, and not costly to collect.
  - Far too costly for an external organization + lack of trust.
- Credit-life insurance
  - Use microfinance networks : reduce marginal costs of collection, established trust relations
  - Insure borrowers in case of death + additional amount
  - e.g. FINCA Uganda : additional 0.5% per month interest rate with a $630 pay out in case of accidental death.

Risk-sharing in rural markets

Weather Index insurance

- Typical insurance problems with respect to crops:
  - Moral hazard;
  - Adverse selection;
  - Transaction costs.
- Rainfall-linked insurance: insure against bad weather instead of bad harvest $\rightarrow$ insurer pays when rainfall fails to reach specified targets.
- Advantages:
  - Solves AS and MH problems : farmer cannot manipulate rainfall.
  - In principle: open to everyone (not just farmers).
  - Simple to administer.

Weather Index insurance

- Hurdles
  - Calculating the right level of premium requires long time series.
  - In case of high shocks (cf. Mitch hurricane in Honduras/Nicaragua) – companies may not be able to withstand and must diversify into various agro-climatic zones (or re-insurance).
  - Basis-risk : discrepancy between measured risks at the meteorological station and at the location of the farm (cf. mountainous areas).
    - Multiply rainfall gauges.
    - Need long time series $\rightarrow$ more difficult.
    - NOTE : climate change can affect validity of time series to evaluate premium.

Risk-sharing in rural markets

Weather Index insurance

- Experiences have been multiplied throughout developing countries, quite recently.
  - Individual-level
  - Aggregate-level (region, nation, institution)
- Evaluated by Forbes as an "unpenetrated natural market" with high potential.
- Example : cattle insurance in Mongolia:
  - Small losses covered by herders ; larger losses transferred to private insurance ; Government intervenes in case of disaster.
  - Whenever mortality rate in a given region passes a certain threshold : herders who have contracted insurance receive a payout:
    - Excess mortality is caused by weather.
    - Solves MH and AS, as well as transaction costs.
    - Mongolia has long and rich data (33 years) on adult animal mortality $\rightarrow$ premium adjusted regionally.

Weather Index insurance

- Impact evaluations (few to date, see review by Carter, de Janvry, Sadoulet, Sarris 2014):
  - Positive outcomes in terms of ex-post shock coping (asset and consumption smoothing)
    - Kenya – index-based drought livestock insurance (Janzen & Carter 2013).
  - Positive outcomes in terms of ex-ante investment behavior:
    - India – rainfall index insurance leads to switch to riskier, higher yield production techniques (Mobarak & Rosenzweig 2013).
    - Ghana – rainfall index insurance more than grants helps farmers to invest in maize fields (Karlan et al. 2013).

Risk-sharing in rural markets

Weather Index insurance

- Remaining puzzling issue is the *low take up* + the less vulnerable households tend to participate more:
  - Lack of understanding of insurance?
  - Trust issue?
  - Are products not well-adapted (expensive)
  - Preferences for present : hyperbolic time preferences.

Risk-sharing in rural markets

Current constraints to the Micro-insurance revolution

- Re-insurance
  - Catastrophic events are rare but costly.
  - Re-insurance : share some risks with other (far-away) insurance companies.
  - Unlike microcredit, microinsurance must start big to attract international re-insurance.
- Data
  - On risk : estimate the right level of premiums (need to adjust for global warming, epidemics, AIDS, etc.)
  - On insurance for the poor (impact, determinants of adoption, etc.)
- Transaction costs
  - Offering small contracts is costly $\rightarrow$ How to cut these costs : group insurance ; MFI networks?

Risk-sharing in rural markets

Informal insurance

- Risk-coping mechanisms need not rely on the formal market.
- Long-standing examples of community-based risk management strategies (cf. Burial societies in Ancient Rome).
- Why can informal arrangements prosper when formal ones don't?
  - *Trust* : trusted networks may solve problems of information asymmetry.
- Can intervene *ex ante* or *ex post*.
  - Risk management versus risk coping.

Risk sharing in rural markets

Examples of ex-ante risk management strategies

- Reduce exposure
  - Crop diversification
  - Focus on less risky crops
  - Reduce inputs
  - Diversify income generating activities (income sources with low positive covariance, e.g. agricultural and non-agricultural income)
  - Short term migrations
  - Marriage strategies, etc.
- BUT...
  - Many of these strategies are income-reducing
  - Some of them are costly (e.g. constraints to entering into non-agricultural profitable income generating activities (skills, working capital))
  - They do not always lead to reduced exposure (cf. crop diversification in case of covariant shocks)

Risk sharing in rural markets

Examples of ex-post risk coping strategies

- Smooth consumption using savings – Precautionary savings include livestock, and other liquid assets (jewelries)
- Liquidating productive assets
- BUT…
  - Asset liquidation is likely to have negative impact on future earnings.
  - Effectiveness is often limited : When common negative shock occurs, incomes are low and so are the returns to different assets (cf. Fafchamps, Udry and Czukas in Burkina Faso 1996)
- Find extra source of income when hardship occurs :
  - Informal credit (very high rates)
  - Child labor in Madagascar (Gubert & Robilliard 2007)
  - Increase working hours in India (Kochar 1999)
  - Labor bonding ($\approx$ slavery)

Risk sharing in rural markets

Risk sharing

- Most of the risk-management / coping strategies seen above are *self-insurance strategies* (intertemporal or intra-household resource allocation)
- Many other strategies involve sharing risks among individuals $\longrightarrow$ *Mutual insurance strategies*:
  - Labor sharing within community
  - Child fostering (Kinsey & Serra 2000 in Zimbabwe; Rakoto-Tiana 2012 in Madagascar)
  - Migrant remittances (Gubert 2002 in Mali)
  - Transfers of food, gifts, or credit at low interest rates
  - Patron-client relationship (Platteau 1995)

Risk sharing in rural markets

Community risk pooling – empirical evidence

- Udry (1994) Nigeria
  - Studies all credit transactions within one village for one year.
  - Evidence of risk sharing...
  - ...but no fully efficient risk pooling.
- Townsend (1994) India (ICRISAT villages)
  - Studies individual consumption variation in comparison to village-average evolution of consumption
  - Finds that evolution is very close : idiosyncratic risks are pooled $\rightarrow$ evidence of nearly perfect insurance.
  - Implication : policies should focus on communities.
- Townsend and Lin (1998)
  - Go back to the field and find that consumption smoothing occurs mostly through individual grain reserves rather than through community risk pooling.

Risk sharing in rural markets

Limits to mutual insurance strategies

- Most of the informal insurance systems provide only partial protection to poor households.
- Main limits to such arrangements are :
  - Incentive problems;
  - Covariant shocks;
  - Inclusion/Exclusion from risk sharing networks.

Risk sharing in rural markets

Incentive problem

- Limited commitment problem :

  Example: consider a community of N agents, that agree before the agricultural season starts to pool crop output and share it. Each promises that, in case of high yields, he or she will transfer some of his/her output to others. In the absence of a sanction mechanism to enforce the agreement, those who realized the highest yield have no incentives to share.

- *Commitment failure*: mutual insurance is not achieved.
- Solutions to the commitment problem?
  - Need a sanction system : moral systems, sharing norms within communities.
  - Repeated interactions and informal relationships : reciprocity in gift/assistance.

Risk-sharing in rural markets

Covariate risks

- Idiosyncratic risk management has focused much attentions, yet covariate risks are as important.
- Most informal insurance mechanisms are set locally, and therefore inefficient in the case of covariate risks.
- e.g. increase in labor supply : in case of drought, everyone increases labor supply : what happen to wages?
- Migration is one way of dealing with covariate risks.
- BUT information asymmetries (imperfect monitoring, moral hazard) (Gubert 2002; Azam & Gubert 2005).

Risk-sharing in rural markets

Formation of risk sharing networks

- Endogenous formation of risk sharing networks : homophily & reciprocity $\longrightarrow$ do not function well for all.
- Goldstein, de Janvry & Sadoulet (2002) in Ghana "*Is a friend in need a friend indeed ?*"
- Fafchamps & Gubert (2002) : formation of risk-sharing networks in the Philippines.
- Hoddinott, Dercon & Krishnan (2009) In Ethiopia :

Table 12.2 Correlates of the presence of networks and their sizes

Variable	(1) Probit[a]	(2) Tobit[b]	(3) Censored least absolute deviations[c]
Household is in second landholding quintile[d]	0.037	0.039	0.607
	(1.11)	(0.04)	(1.21)
Household is in third landholding quintile[d]	0.038	0.527	0.685
	(1.40)	(0.60)	(1.32)
Household is in fourth landholding quintile[d]	0.052	1.904	1.856
	(1.97)**	(2.18)**	(3.97)**
Household is in highest landholding quintile[d]	0.028	3.037	1.726
	(1.18)	(3.07)**	(2.52)**

+ other controls

Risk-sharing in rural markets

Summing up

- Vulnerability to risk is not only a feature of poverty, but also a cause of poverty.
- Poor have set up various ingenuous ways to deal with risk but informal systems remain imperfect in many respects.
- Formal insurance difficult due to information asymmetries and do not reach the poor.
- Micro-insurance is a very much on-going research topic.
- Role for public interventions:
  - Insuring the poor reduces poverty $\rightarrow$ subsidies / reinsurance.
  - Collecting reliable data.
  - Other types of interventions not directly towards insurance market:
    - Education on the nature of risks
    - Safety nets provision
    - Encourage saving (self-insurance)

Informal and formal credit markets

Informal and formal credit markets

- Insurance solutions deal with the problem of *volatility* and risk.
- This is not the only constraint to individual and firm-level development.
- Another, widespread finding in the developing world is that of *underinvestment*.
  - Small firms lack the possibility of scaling up.
  - Farmers lack the possibility of investing in productive technology.
  - Parents lack the possibility of investing in education and health for their children.
  - Lags between input and output require credit for businesses to survive.
- Is microcredit a solution?

- Most of the world's poor are excluded from formal credit through traditional banking systems.
- When they are included, they face high and variable interest rates.
  - Ghatak (1976), India : 3% for deposits, 20% for lends
  - Dasgupta (1989), India : 14% for deposits, 52% for lends
  - Aleem (1990), Pakistan : 32.5% for deposits, 78.5% for lends
  - Rosenberg et al. (2009): median interest rate of 26% for profitable MFIs (but declining trend).
- Extreme variability in the lending rates within the same sub-economy (ratio highest/lowest up to 3 in India or Pakistan), varying from 0 to 7.5% monthly in Nigeria (Udry, 1991).
- Rich people borrow more and pay lower interest rates – Poor are often excluded and/or face very unfavourable borrowing conditions.

Why do we observe these features?

- High risk of default?
  - Same studies find very low default rates (1 to 2%)
- Lack of competition?
  - Competition among lenders seems high in many observed markets : large number of lenders (shopkeepers, moneylenders, ROSCAs, etc.)
  - However, regional variations : in many SSA countries, low population density, low market integration, little use of input : credit markets are less developed (high transaction costs).
- Information asymmetries?
  - Adverse selection
  - Moral hazard

A simple model by Banerjee & Duflo

- Can these facts be explained in a formal model?
- Let's say the gross interest rate is $R = 1 + r$, and the risk of default on a loan is *d*.
- If banks make no profit (competitive market), they then pay (1-d)R to deposits.
- The expected marginal product of capital equals (1-d)R.

  $\Rightarrow$ consistent with high interest rates, but not with the rest.
- Additional problem: Default rates are quite low in DC credit markets.

Banerjee & Duflo (continued)

- Let's say banks lend to entrepreneurs who produce F(k), where k is the amount of capital invested.
- An entrepreneur with initial wealth w, looking to invest k, will need to borrow the discrepancy and reimburse $(k - w)R$.
- Now let's assume that there is a possibility of escaping payment, at a cost **h** proportional to the investment sum k.
- The borrower reimburses if:
  - F(k)-R(k-w) > F(k)-hk
  - The lender is incentivized to set k such that the borrower reimburses.

Banerjee & Duflo (continued)

- Lender needs to set $R(k-w) < hk$
  - Leads to $\frac{k}{w} = \frac{R}{R-h}$
  - Not much leeway on R (competitive market, needs to pay depositers R)
  - Lender will adjust loan sizes.
- Explains low rates of default (outcome of the model).
- And also that rich people can borrow more than poor.
- It doesn't however explain the (high) interest rate in itself, which is fixed by the market.
- What is missing: in the real world, lenders have monitoring costs to ensure borrowers hold up their end of the bargain.

Banerjee & Duflo (continued)

- Now introduce a fixed monitoring cost c.
  - Even informal lenders need to "check" who their are lending to.
  - Otherwise lenders can run away at zero cost.
  - The interest rate needs to adjust.
- $R(k-w) = D(k-w) + c$
- The lender still has the option of paying to runaway, so:
- $R(k-w) = hk$ must still hold.

  $\Rightarrow D(k-w) + c = hk$

Banerjee & Duflo (continued)

- k is still the only choice variable for the lender.
- The last condition gives us:
- $k = \frac{Dw-c}{D-h}$
- New predictions:
  - When $c > Dw$, no lending occurs (some people won't be able to borrow at all).
- k is increasing in w and h.
  - Wealthier people get to borrow more.
  - People with higher costs of escaping get to borrow more.
- But, there is still the question of interest rates and how they are set.

Banerjee & Duflo (continued)

- Let's go back to equation $R(k-w) = D(k-w) + c$.
- Which we write as: $R = D + \frac{c}{(k-w)}$
- Replacing k by the expression from the previous slide we get an expression of the interest rate as a function of the exogenous variables in the model:
  - $R = D + \frac{c(D-h)}{hw-c}$
- Contains an implicit multiplier effect.
  - The interest rate increases more than proportionally with monitoring costs $\Rightarrow$ a kind of multiplier.
  - What is the intuition behind it?

Banerjee & Duflo (continued)

- This model fits with all the salient facts:
  - Interest rates are high and variable.
  - Wealthier people can borrow more often and for less.
  - Default rates are low.
- A good representation of credit markets in developing countries?
- What are the economic factors behind the mechanisms?
  - Incentives to flee are lower for wealthier individuals.
  - Information asymmetry (costs need to be engaged to prevent people from defaulting).
  - But also another mechanisms $\Rightarrow$ in the model, c is independent of k $\Rightarrow$ means costs as a percentage are decreasing in the amount lent.

Collateral

- The previous model does not rely on *collateral*.
- Lenders—instead of increasing R—could ask for collateral.
  - Reduces the cost of default.
  - Reduces risk of moral hazard.
- However, this also leads to credit rationing:
  - The poor do not possess enough collateral.
  - Or, collateral is too risky to engage (land & livestock — Boucher, Carter & Guirkinger 2008)

Informal and formal credit markets

Rural financial intermediaries

- **Formal intermediaries**
  - Intermediaries under control of the central bank
  - Usually banks and institutions which are collecting savings

- **Semiformal intermediaries**
  - Village banks, solidarity and self-help groups promoted by NGOs, MFI

- **Informal intermediaries**
  - Family and neighbours
  - ROSCAS

  } Non-profit segment ("moral")

  - Moneylenders
  - Deposit collectors
  - Pawnbrokers
  - Landlords/employers (interlinked)

  } Profit segment

Rotating Savings and Credit Associations (ROSCAS)

Pros

- Low cost
- High repayment rates (enforcement capacity)
- Unbureaucratic : quick loan delivery
- No collateral
- Mutual insurance system
- Saving behavior

Cons

- Relatively short-term oriented
- Small amounts (limited capacity)
- No inter-regional intermediation (covariant shocks)

	Formal lenders	Local informal lenders
Pro	– Saving mobilization – High volume, long term loans – Economic development	– Low transaction costs: information access, monitoring, enforcement capacity (collateral) – Flexibility (in-kind vs. cash loans)
Cons	– High transaction costs : Information access (screening, monitoring), enforcement (credibility)	– Greater risks (savings) – Covariant risks – Low capital mobilization capacity

- Informal sector still dominates in many rural areas where formal lenders are established:
  - Rationing in formal sector.
  - Poor are risk adverse and prefer paying greater interest rates than risking losing collateral.
  - Insurance strategy from the poor : borrow from one sector to repay in the other?

- Credit access is a public good
- What role for the State ? Private actors? Communities?

Public interventions

- 1980s : “repressive” interventions
  - Interest rates ceilings
    - Screening of “creditworthy” clients – collateral – credit rationing
  - State agricultural banks, subsidization
    - Crowding-out of private actors and segment of the market
    - State banks face important transaction costs – same outreach problem
    - Low repayment rates (cf. 46% in India’s integrated rural development program in the 1980s)
- Costly and inefficient interventions, reinforced wisdom that lending to the poor is not possible.

General objectives

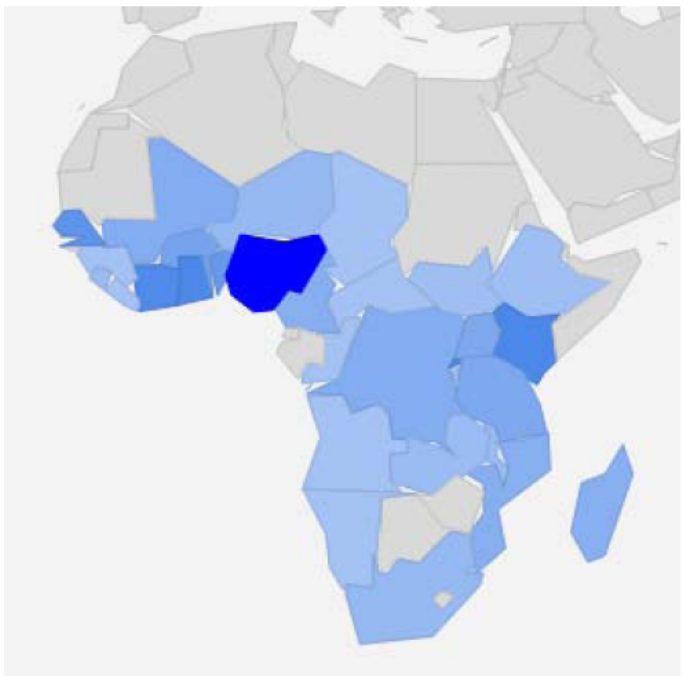
- Lend to the very poor
- At reasonable interest rates
- Without asking collateral

Wordwide success

- About 2500 Microfinance institutions
- 150-200 million customers (500-600 million beneficiaries)
- Repayment rates usually > 95%
- Social performance is good (women and poor among customers : 80% women borrowers among the 34 larger institutions)
- Nobel peace prize for Mohammed Yunus and the Grameen Bank in 2006.

A look at microfinance in SSA

The following report is a deep-dive into the 259 institutions that reported to MIX in the 2011 financial year.



Number of reporting institutions
Shade indicates total number of institutions

0 | 1-9 | 10-18 | 19-40

Total Number of institutions: 259

	Countries included in this report	Bank	Coop.	NBFI	NGO
CEMAC	Cameroon, Central African Republic, Chad, Republic of Congo	0	4	5	1
EAC	Burundi, Kenya, Rwanda, Tanzania and Uganda	8	17	24	10
SADC*	Angola, Democratic Republic of Congo (DRC), Madagascar, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe	6	4	11	14
WAMU	Benin, Burkina Faso, Ivory Coast, Mali, Niger, Senegal and Togo	0	54	8	19
Other	Ghana	0	0	12	6
	Ethiopia	0	0	3	0
	Nigeria	38	0	0	2
	Comoros, Guinea, Liberia, Sierra Leone, South Sudan	1	5	2	2

* Tanzania, member of both EAC and SADC, has been included in the EAC sample for the purpose of this report.

www.themix.org

Principles of microfinance

- Overcome market failures by relying on institutional strengths of informal institutions (low information, monitoring, enforcement costs).
- Framework capable of bringing in resources from the private sector, government and donors.
- Joint liability as a substitute for collateral : reduces transaction costs and enable to lend to the poor.

Grameen Bank, Bangladesh

- Mohammed Yunus started in 1974 at the time of famine in Bangladesh
  - Started lending from his own pocket to women making bamboo stools
  - Mechanism close to informal credit (RoSCAs) : take advantage of local information and social assets
  - Focus on poor, rule of eligibility (< 0.5 acre / capita)
- Functioning:
  - Group lending : voluntary groups of 5.
  - Joint liability: loans are individual, but if group member does not repay, all group members lose membership.
  - Interest rate $\simeq$ 20% year.
  - Group meetings.
  - List of moral values (child care, education, environment etc.).

BancoSol, Bolivia

- Started as an NGO in 1984, became a bank in 1992.
- Banking activity exclusively, microcredit is now one service.
- Individual loans or group lending, but also moved into savings.
- No subsidies, interest rates are relatively higher (but lower than moneylenders‘ rates).
- Does not focus on the poorest, loan size are relatively high (1700$ on average).
- Flexible repayment schedules.
- Model replicated throughout Latin America.
- From 17 000 (1992) to 233 000 (2013) active borrowers.

VBSP in a mountainous district of Vietnam

- VBSP is one of the largest MFI (7.1 million active borrowers in 2013 !).
- Largely subsidized by the government.
- Very low interest rates (below inflation rate).
- Targeted to poor households.
- Relies on village organization to select borrowers (screening costs), operate the transaction, monitor and collect the payment.
- Individual loans but in case of default, the village is not selected in the following wave.

Heterogeneity among MFIs

- Group lending vs. individual lending.
- Low default rates.
- Poverty targeting strategy also differs (the poorest of the poor, vs. the richest poor).
- Subsidization vs. self-sustainability (what interest rates?).
- Social lending vs. profitable activities.

Targeting women

- Because of social targeting (women are over represented in poor classes).
- Poorer women have less access to credit than men (Men control land and main assets).
- Social objective : raise bargaining power, child health and education.
- Women are more conservative in their investment strategies :
  - Empirical studies find greater repayment rates among women than men : 81% W vs. 74% M in Bangladesh (Hossari 1981); 92% W vs. 83% M in Malawi (Hulme 1991).
- BUT these are again correlations, there are selection issues to identify gender effects.

Current debates

- On the 'mission drift' : increased loan sizes in the process of scaling-up activities.
  - Cross-subsidization?
  - Progressive lending.
  - Tension between earning money vs. helping the poor?
- Subsidization vs. self-sustainability.
  - Some argue that social objectives should prevail – target to the poor.
  - Financial sustainability comes at the price of higher interest rates, may prevent the poorest from benefiting.
  - Some argue that self-sustainability should prevail : competitive sector that will create innovations.
  - As long as people are able to borrow, the social impact is positive (beyond beneficiaries).

Impact: is microfinance really helping the poor?

- Rigorous empirical evaluation find weak or no impact.

What does the aggregate evidence say?

- Banerjee, Karlan and Zinman (2015):
  - "methods are deployed across an impressive range of locations—six countries on four continents, urban and rural areas—borrower characteristics, loan characteristics and lender chracteristics. Summarizing and interpreting results across studies, we note a consistent pattern of modestly positive, but not transformative, effects."
- Meager (2019):
  - Studies heterogeneity across program effects in seven studies.
  - Confirms a modest positive effect, with low heterogeneity
  - Used as an argument for external validity.

Impact: is microfinance really helping the poor?

- But others are more skeptical.
- Garikipati (2017)
  - "Overall our results suggest that the economic impact of lending to the poor are at best modest and cannot in any way be taken for granted"
- Duvendack and Mader (2019): A systematic review of reviews
  - "Overall, the effects of financial services on core economic poverty indicators such as incomes, assets or spending, and on health status and other social outcomes, are small and inconsistent. Moreover, there is no evidence for meaningful behaviour-change outcomes leading to further positive effects"

Buera, Kaboski and Shin (RES,2021)

- What are the macroeconomic impacts of microfinance?
  - In terms of income distributions and GDP.
- Dynamic general equilibrium model.
  - Vary microfinance at the intensive and extensive margins (increased loan size vs. scaling up).
  - In the partial equilibrium, increases in loan size give rise to increased ouput and investment.
  - But allocative efficiency (TFP) decreases since capital is allocated to less than average productive entrepreneurs.

Buera, Kaboski and Shin (RES,2021)

- In the long run...
  - As microfinance is generalized, savings drop, decreasing the amount of capital and pushing up interest rates.
  - However, allocative efficiency improves as coverage increases, which more than offsets the shock on the interest rate.
  - In the long run, welfare effects are positive for most individuals.
- Gains are unevenly distributed:
  - Previously viable entrepreneurs are worse off because of the increased interest rate.
  - Poor consumers and constrained entrepreneurs are better off due to the availability of credit.
  - The wealthiest gain the most, since the return to wealth increases.

What curbs the enthusiasm about microfinance?

- *Reach*:
  - Banerjee, Jackson et al. (2013)
  - Collected detailed network data 6 months prior to a MFI entering 43 Indian villages.
  - When the MFI entered, it gathered community leaders and asked them to help spread information about the loans.
  - Individuals decide to participate or not, and who to inform or not.
  - Participants are 7 times more likely to pass on information, but information from non-participants accounts for 1/3 of eventual subscriptions.
    $\Rightarrow$ implications for where to ideally inject information.

What curbs the enthusiasm about microfinance?

- *Are interest rates prohibitive?*:
  - Even though MFI provide loans at lower cost, they still typically charge an annual interest rate of 20%. Is it too much to bear?
  - Dean Karlan: Interest rates in Mexico (Compartamos Banco) were highly sensitive to interest rates.
    - A 10 p.p. decrease increased market size so much that lenders increased their revenue.
  - Banerjee (on the same program): A low intial take-up and high elasticity to interest rates suggests people are *not* that constrained.
    - Rather, credit is an option out there, but not a major constraint to the realization of welfare.
  - What about information constraints?

What curbs the enthusiasm about microfinance?

- *Group liability and individual liability*:
  - Group liability: sold as a means to overcome information asymmetries by delegating to social networks the monitoring of loans.
  - But has also been criticized for creating excessive pressure and discouraging (good) clients.
    - Conflicting evidence in the small literature.
    - Karlan & Giné (2007): find that converting from group to individual liability did not affect repayment rates in the Philippines.
    - Breza (2016) finds the opposite in Andra Pradesh, India.
    - Attanasio et al. (2011) find higher rates of business ownership among group liable borrowers in Mongolia, suggesting joint liability may reinforce social pressure to use loans productively.

What curbs the enthusiasm about microfinance?

- *Crowding out: what happens when scaling up?*
  - Burgess & Pande (2003): large-scale nationwide increase in rural banking in initially low-covered locations.
    - Central Bank of India authorized agencies opening in locations where a bank was initially present, provided they opened **four** agencies in locations without banks.
    - Led to significant poverty reduction and increase in non-agricultural output.
  - Breza & Kinnan (2017):
    - Evidence from the Indian state of Andra Pradesh, where microfinance activities were shut down in October 2010.
    - This meant decreased loans across the country, since balance sheets of MFIs were negatively affected by the policy.
    - Decreased lending led to decreased consumption and wages, proportional to the size of exposure.

What curbs the enthusiasm about microfinance?

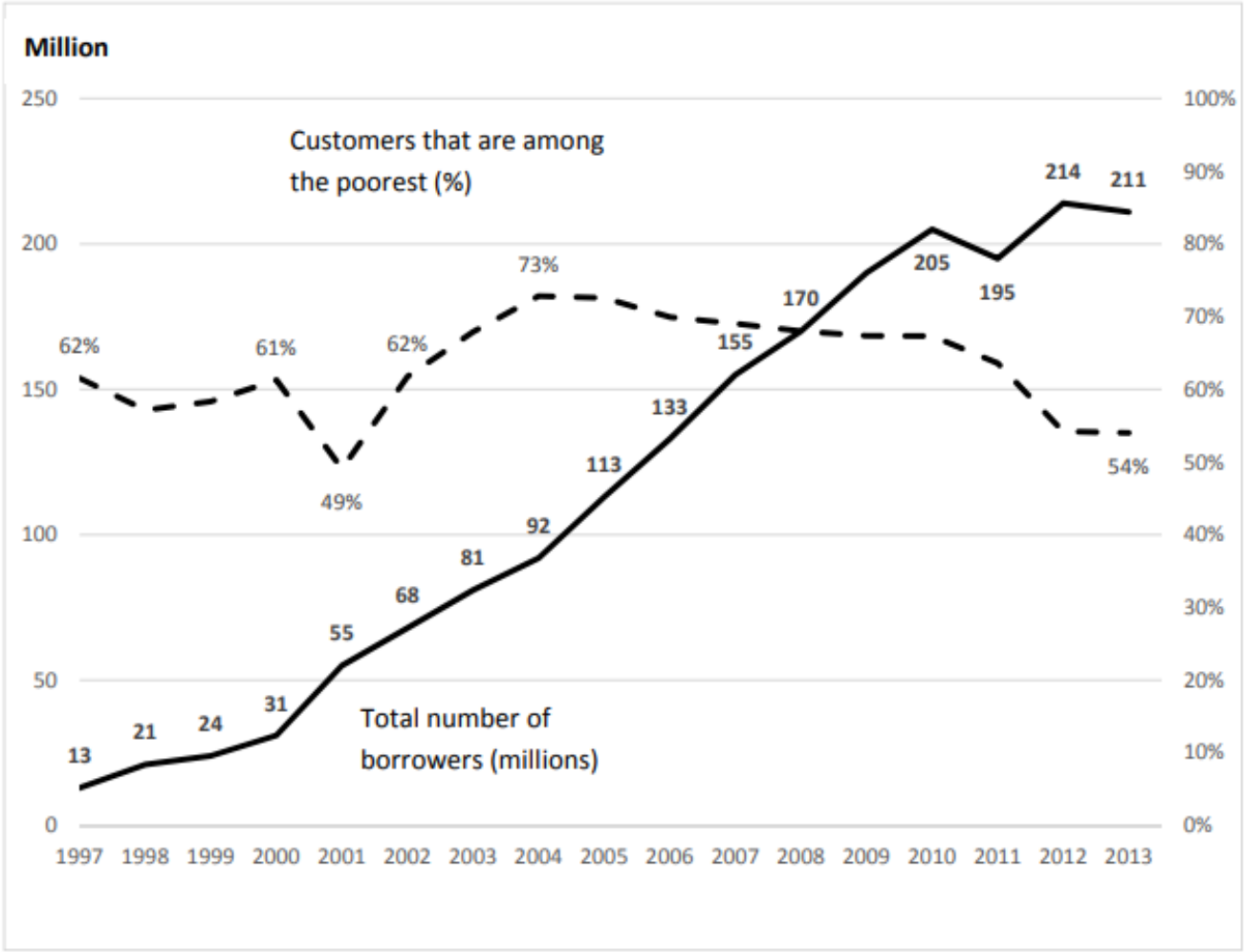
- *Are the right beneficiaries being targeted?*:
  - Hertzberg et al. (2007)
  - Look at moral hazard in an Argentinan bank.
    - Loan officers choose not to report bad news when it will reflect poorly on their own ability.
    - Poor financial management by a customer means poor initial screening by the loan officer.
    - A rotation scheme helped deal with the moral hazard problem.
    - When loan officers expect a rotation, they are more inclined to truthfully report bad news.
    - This is since bad news being reported by the replacing officer reflects even worse on them.

      $\Rightarrow$ the right incentives must be in place for efficient loan management.
  - Banerjee, Cole & Duflo (2004): Underlending in India.

Cull & Morduch (2018)

- How should we look at microfinance today?
  - Most see it as a useful tool delivering a valuable service, but not leading to transformative outcomes.
  - Others go further, denouncing a neoliberal tool exciting donors but doing little to help communities.
  - Some claim that the focus has shifted from poverty reduction to economic profitability.
  - What to make of all this?

An amazing success in numbers



Source: Cull & Morduch (2017)

The need for context

- The six studies prefaced in an issue of AEJ: Applied Economics by Banerjee, Karlan and Zinman corresponded to radically different settings.
  - Imprecise but promising estimates in low-penetration areas like Ethiopia, Urban India and Morocco.
  - Weak evidence of impact in the highly saturated contexts of Mexico, Bosnia-Herzegovina and Mongolia.
  - Comparing asset and capital transfers to microcredit:
    - Not having to repay undoubtedly improves impact on income and consumption.
    - BUT alsao, not the same populations! Asset and cash transfers tend to go to the poorest of the poor, where impacts are specifically large.
  - Intensive or extensive margin?
    - Banerjee et al. (2015) divide entrepreneurs into two groups; pre-existing, and those who create businesses when they get accces to credit.
    - Shows large gains in the first group, negligible ones in the second.

Microfinance as liquidity services

- Cull & Morduch (2018): Viewing microfinance as merely access to credit for entrepreneurs scaling up is a narrow view.
- Collins (2019): Financial diaries of households in both urban and rural areas.
  - Even if microfinance does not reduce poverty, it helps household with money management.

    $\Rightarrow$ Getting access to money *when* they need it.
  - A missing market: wage-earners who have no desire for self-employment but who need finance for their well-being.