credit

C. Echevarria

Outline

- Importance of financial intermediaries (FIs)
- Credit markets in DCs
  - Uncertainty (risk)
  - Asymmetric information
  - Limited liability

Outline

- Credit markets in LDCs
  - Institutions
  - Characteristics of rural credit markets
  - Informal credit market theories
- Semiformal markets (DCs & LDCs): pawnshops

Importance of FIs

- Channel funds from savers (lenders) to borrowers.
- In order of importance, lenders:

1. households
2. business firms
3. Government
4. (foreigners)

Importance of FIs

- Borrowers:

1. business firms.
   1. **Fixed capital credit:** start up or expand
   2. **working capital credit**: finance ongoing activity (cash flows)
2. government
3. Households: **consumption credit**:
   1. Shocks
   2. to smooth C (aleatory income)
4. (foreigners)

FIs

- Three main kinds:

1. Depositary institutions (commercial banks): take deposits from savers and use them to lend to borrowers.
2. Contractual saving institutions: insurance companies and pension funds.
3. Capital (stock and bond) markets: savers provide funds directly to firms.

- Distinction between depositary institutions and capital markets conceptual: dividing line tenuous in DCs.

History

- Depositary institutions, in their most basic form, have been around for centuries and a basic or traditional "banking" system is present in almost all countries
- Goldsmith (1969): WE and NA: more sophisticated banking system: starts in the 2nd half of 19th century, fully developed by 1st half of 20th century, coverage of the whole population by 2nd half of 20th Century
- Capital markets: modern invention (NYSE 1792), explosion during the 2nd half of 20th Century in DCs: ½ US households own shares vs. 5% in the 1950s

Functions

1. (any intermediary) reduce information and transaction costs
2. "risk pooling"
3. they pool savings.

FIs and growth

1. improve efficiency of investment (ΔD): canalize savings to best projects →
2. increase return on savings → stimulate savings (ΔQs)
3. stimulate investment (ΔD) by:
   1. reducing risk
   2. improving information
4. stimulate saving by increasing liquidity (ΔS)

- Empirically, relation is positive and robust (King and Levine 1993) quantitatively not huge.

Risk of default

- Payment uncertainty
- Two risks :

1.involuntary default (inability to pay): collateral

2.voluntary (strategic) default: contracts. Problem where legal system is weak. Larger amount owed, larger incentive to default. Example: international debt.

International debt

- No international court of law.
- lender country has two alternatives (threats):
  - no further loans
  - cease trade
- Solution: countries can borrow ONLY small proportion of GDP
- Having an effective international court of law would benefit LDCs

Asymmetric information

- Lack of personal knowledge
- Creates two problems:

1.Adverse selection: **before** transaction occurs: borrowers most likely to default (bad risks), ones most actively seeking loans.

2.Moral hazard: **after** transaction happens: borrower engages in riskier activities

Limited liability

- no coincidence of interests.
- Example: two possible projects with initial investment of 100,000. The bank charges 10%.

1. pays 120,000 with certainty.
2. pays 230,000 with probability 1/2 and 0 with probability 1/2.

- Expected returns?

1. Borrower: 10,000. Bank: 10%.
2. Borrower: 60,000. Bank: -45%.

Credit markets in LDCs

- Institutions:

1. Formal FIs mostly depositary institutions.
2. government banks play a much more important role in LDCs than in DCs
3. Importance of informal lenders, especially in rural areas (**rural credit markets**).

Credit markets in LDCs

Moneylenders?

1. No assets to use as formal collateral:
   1. Other assets
   2. property rights of the asset not well established
2. Illiteracy: formal contracts not an option
3. legal system does not work.
4. Personal knowledge

Characteristics of rural credit markets

1. **Informational constraints**
2. **Segmentation**
3. **Interlinkage** Reasons:
   1. Hidden interest.
   2. Information
   3. Enforcement

Characteristics of rural credit markets

4. **Interest rate variation**
5. **Credit rationing :** at the going interest rate, borrowers would like to borrow more. Two forms:
   - bank refuses to lend: response to adverse selection problem
   - bank lends but restricts size: response to moral hazard.
6. **Exclusivity**

Problems

1. High interest rates (30% a month in South Africa).
   1. Stated as a fee
   2. (Dehli) not so large when ½ pay in 3 months (5% default)

Problems

2. Credit rationing
3. No fixed-capital credit:

- never lend enough for the borrower to put herself in a situation in which she never needs to borrow again

High interest rates

Potential reasons:

- High costs
- **Monopoly**. Theoretically: closely to monopolistic competition. Empirical studies confirm that.

High interest rates

3. Risk premium Suppose she can borrow at 10% (annual) & probability of default is 50%. She charges 120% annual (6.8% monthly) plus the mark-up.

- Problem with this explanation: actual rates of default lower in informal market.

Credit rationing + strategic default

- Small loans
- borrower can guarantee himself a level of profit A without a loan & has a time-horizon of N years

$$\text{Max } f(K) - K(1 + i) \geq A$$

borrows until MPK = gross interest rate → usual investment demand function

Credit rationing + moral hazard

- no-default condition:

$$N[f(K) - K(1 + i)] \geq f(K) + (N - 1)A, \text{ or}$$

$$f(K) - (N/(N - 1))K(1 + i) \geq A.$$

- N = infinity: never default.
- N=1: default with certainty (only punishment no more lending and no conscience)

Credit rationing + moral hazard

- (game theory) The lender thinks strategically: for each i, max K that guarantees no-default?

$$MPK/(N/(N - 1)) = (1 + i)$$

to the left of investment demand function

- applies to international debt: credit rationing b/c only weapon is to deny future loans. N is not infinity b/c countries live for ever but politicians do not.

Credit rationing +involuntary default

- No loans
- Two types of borrowers: Safe (gets SR with certainty) and Risky (gets RR > SR with p). Both need a loan L. Lender has only L to lend out.

1. Safe borrows until (1 + is) = SR/L
2. Risky borrows until (1 + ir)= RR/L.

Credit rationing + adverse selection

A. If bank charges ir, Π = p (1 + ir) L - L
B. If bank charges is, Π = (1/2) is L + (1/2) [p (1 + is) L - L]

Π > Π if p < (R/(2R′-R))

Pawnshops

- Moneylenders: informal credit markets in rural environments in LDCs.
- Pawnbrokers: semi-formal credit markets in urban environments in both DCs and LDCs.

characteristics

1. small loans (average size in Canada is $100),
2. consumption loans,
3. for a short period of time,
4. personal possessions as collateral
   - small collateral means customers are usually low-inc. in DCs but may be low-mid.-inc. in LDCs (middle class going through rough time).

Characteristics

5. no contract,
6. high rate of default (40% in Canada),
7. high rates (often disguised as finance fee b/c rates are capped in many DCs), and
8. principal only a fraction of value of collateral: goods are sold at a discount

A little bit of history

- pawnshops existed in Greece and Rome,
- in Western countries, Modern ones date back to XV Century: Franciscans used them as today's microfinance
- were called Monte di Pietà (pity, mercy)
- developed into credit unions.

Similarities

- Cater to low-income:
  - small loans
  - for consumption purposes
  - for short periods of time
  - without a contract
  - to people who has no access to formal credit markets.

Similarities

- high rates:
  - costs of administering small loans are high

Differences

Urban/rural distinction is crucial:

- Moneylenders cannot work in urban environments:
  - cannot have the personal knowledge that the moneylender has
- Pawnbrokers cannot work in rural environments:
  - need a 1) large and 2) transient population to be able to sell goods

Differences

- Costs are higher for pawnbrokers: added cost of keeping inventory: long rotation period
- Default rates higher for pawnbrokers
  - Lack of personal knowledge
  - Self-selection in DCs: reason for no access to formal market may be poor credit history.

Insurance

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Outline

- Introduction
  - risk aversion
  - Insurance
- Moral hazard
- Enforcement
  - Self-enforcing
  - Incomplete insurance
  - Social norms
- Conclusion

Introduction

- Saving: income minus consumption (positive or negative).
- When positive, households accumulate savings as assets (store of consumption/purchasing power):
  1. physical assets:
  2. financial assets:
- When negative, consumers use their wealth (assets minus debts) or borrow.
- households use credit and saving to smooth consumption:

Introduction

- another way of smoothing consumption: insurance. Two fishers, similar boats, get together and decide that one is fishing North and other South, and they will share their output. (Lloyd's started doing this for ship-owners)
- notice two things:

1. one agrees to fish North and the other South so their outcomes are not positively correlated
2. no expectation of paying back (at least the luck changes): Contingent (re) payments

Risk aversion

- Risk aversion = utility of expected value > expected utility.

$EU = p\,u(H) + (1 - p)\,u(L) < u(M)$ where $M = p\,H + (1 - p)\,L$

- Most households supposed to be risk-averse
- the greater the variance/standard deviation,

1. the greater the difference between EU and u(M) → the more desirable insurance *ex-ante.*
2. (if outcome turns out to be H) the larger the difference between u(H) and u(M) → the greater the loss *ex-post*.

Insurance

- Enough members: able to completely eliminate the risk.
- Income: $Y = A + \varepsilon$, ε = random shock of mean zero and independently distributed
- members pay realized value of ε into a common fund: all members end up with income $Y = A + \varepsilon - \varepsilon = A$.
- Empirical studies in poor countries: insurance is far from perfect: consumption follows income fairly closely.
- poor people less able to insure themselves → lot of insurance done using asset accumulation

Moral hazard

- Information not a problem in small communities.
- Solution to moral hazard : incomplete insurance
- two possible harvest outcomes: H and L.
- if farmer employs care, the probability of H is p
- if does not, the probability is q, p > q.
- Assume in the absence of insurance

$$p\,u(H)+(1-p)\,u(L) - C > q\,u(H) + (1-q)\,u(L)$$

Moral hazard

- Full mutual insurance:

1. good crop: puts (1 - p)(H - L)
2. bad crop: takes p (H - L)

- each receives the average value, p H + (1 - p)L, with certainty.
- Scheme is feasible **only** if everybody makes the extra effort
- Final community's average output of

$$q\,H+(1-q)L < p\,H + (1-p)L$$

Moral hazard

- Partial Insurance (second-best)

1. Feasibility: $p\,X + (1-p)Y = p\,H + (1-p)L$.
2. Incentive compatibility:

$$p\,u(X) + (1-p)\,u(Y) - C \geq q\,u(X) + (1-q)\,u(Y);$$

- Solving $(p - q)[u(X) - u(Y)] \geq C$.
- left hand side: benefit from extra effort: expected difference in utility.
- right hand side: cost of extra effort.
- formal insurance systems: not completely covered either: deductible.

Self-enforcing insurance

- lack of a formal contract
- the larger the variance the more to be gained from insurance.
- However, once the lottery is realized, the larger the variance, the larger the incentive to default (renege) for the ones with a good draw →
- few mutual insurances schemes are self-enforcing.

Self-enforcing insurance

- time horizon of N years (repeated game).
- lottery self-enforcing if

$$N[u(M) - EU] \geq u(H) - u(M),$$

where EU= expected utility and

$$M = p\,H + (1-p)L.$$

- right hand side: gains from deviating;
- left hand side: expected loss from deviating
- the greater N, the larger the probability scheme is self-enforcing.

Incomplete insurance

- How can partial insurance solve the problem? the incentive to renege is lower.
- Incentive compatible: $N[EUpi - EU] \geq u(H) - u(X)$,

where $EUpi = p\,u(X) + (1-p)\,U(Y)$.

- Feasibility: $p\,X + (1-p)Y = M$.
- we can write the compatibility constraint as

$$u(X) + N \cdot EUpi(X) \geq u(H) + N \cdot EU = A$$

$$M < X < H$$

Incomplete insurance

- If LHS > A between M and H, complete insurance is self-enforceable.
- If LHS < A, no partial insurance scheme is self-enforceable.
- If LHS = A at X* (between M and H), X ≥ X*: self-sustained partial insurance schemes (should choose X*: closer to complete insurance)

Incomplete insurance

- Second best. Closer to first best

1. Low discount rate (long time horizon)
2. High risk-aversion
3. Small variance

Social norms

- encourages payments and punishes deviations with measures such as ostracism.
- carries a loss in utility S (= N·s, present value of a stream of sanctioning).
- enforceability becomes

  $N[u(M) - EU] + S \geq u(H) - u(M)$
- The community may have the ability to impose a social sanction strong enough to make complete insurance feasible

Social norms

- Most likely, reinforces an incomplete insurance. Feasibility becomes

  $N[EUpi - EU] + S \geq u(H) - u(X)$
- We can rewrite the condition as

  $u(X) + N \cdot EUpi(X) \geq u(H) + N \cdot EU - S = A(S)$.

1. S may be strong enough so RHS > A(S) → complete insurance sustainable;
2. can push RHS to a level such that partial insurance is sustainable while no insurance sustainable in the absence of S

Social norms

- If community loses power to impose sanctions or can only impose very weak sanctions, insurance scheme may disappear.
- Townsend (1995): not all villages are alike: wide variation in village institutional organization even within same county (amphoe Maajaam, Northern Thailand).

Conclusion (Murdoch)

- The importance of agriculture in the economy makes income more uncertain for large groups of the population in LDCs.
- Empirical studies (India, Thailand, Côte d'Ivoire,…): a lot of consumption smoothing in rural environments but less than full insurance.
- markets do not exist or work imperfectly: institutional mechanisms fill the holes
- Holes still exist but a good deal smaller than assumed: being poor not inconsistent with rational, forward-

Conclusion

- policy implications:

1. publicly provided financial services and social security **may** crowd out private efforts with limited net gain to society: argument depends on relative efficiency of public versus private action.
2. these institutions are "second best".

Conclusion

- Ability to smooth consumption measured by how closely consumption follows income.
- One of the ways of smoothing consumption: smoothing income itself →
- an efficiency loss.

Conclusion

- Examples:

1. Studies in Puebla (Mexico) and Pulanpar (Uttar Pradesh, India) show high risk explaining low fertilizer use
2. Households do not move from subsistence farming to producing for the market because commodities markets are too volatile
3. They cultivate traditional varieties rather than riskier, high yielding varieties (rice in South India, ICRISAT)
4. In Europe farmers use to give up 10% of average income through working a variety of small fields rather than a single, consolidated plot.

Special role of families as non-market institutions for credit and risk-sharing

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Outline

- Introduction
- Quasi-credit
- Mutual insurance
- Social assistance
- Others
- Altruism
- Potential problems

Introduction

- Moneylenders: informal **market**
- mutual insurance schemes: non-market institutions for risk-sharing: markets do not exist or work imperfectly.
- special role of families when markets do not exist or work imperfectly.
- Enormous amount of family transfers, either in cash or in kind.

Introduction

- Some are presents
- Some are exchange
- Most important ones belong to two groups: According to sociologists, families perform two main functions:

1. **social placement function**: bequest-type. Recipients are usually descendants (not always: Philipines).
2. **support function**: problematic situations. Recipients are not necessarily descendants.

- Important role of families in groups without access to financial markets (immigrants,…)

Introduction

- Main characteristic: no contract

(Quasi) Credit

- strong assumption of (non-contingent) repayment.
- no asymmetric information problem within families
- families willing to lend even in the presence of involuntary risk: no collateral

Quasi-credit

- Characteristics

1. time of repayment usually not set
2. interest rates are very low, sometimes negative
3. the family internalize the risk of involuntary

- Ease borrowing constraints

Mutual insurance

- informal risk-sharing mechanisms: likely transfer reciprocated; repayment contingent.
- Extended family = insurance society

Mutual insurance

- Advantages:

1. Smaller incentive to shirk (not put enough effort)
2. Smaller incentive to renege
3. Families more able to impose social sanctions.

Mutual insurance

- Problem: diversification may be limited. Rosenzweig (1988): marriage inter-villages. Another example in Vaughan.

Solidarity networks

- no assumption of repayment, either contingent or non-contingent.
- rich relatives provide for the needs of poor relatives (female headed households): income transfers within extended families.
- Observed in Africa, Asia, in Europe in pre-industrial times, …
- play role of welfare system in DCs: *ex-ante* insurance mechanism

Others

1. Old age security
2. Employment insurance
3. Health assistance (disability, illness, …)

Altruism

- not limited to kin (family) but stronger within families (stronger the larger the degree of consanguinity)

Altruism

- Altruism explains:

1. Other presents
2. Characteristics of exchanges (not trade)
3. Bequests
4. Social support transfers
    1. Old age security
    2. confers advantages to extended family as MIS
    3. characteristics of quasi-credit (low interest, internalizing of risk): transfer without reciprocity
    4. explains solidarity networks

Altruism

- Selfish *homo economicus* just a working assumption.
- Why do economists do not find evidence of altruism? Usual economic definition is too strict.
- Altruism or exchange? Determines outcome of public policy
- Cox: evidence of crowding-out.

Potential problems

- System subject to abuse as welfare system in DCs, for example.
- May have negative impact on saving and investment: is a formal system Pareto improving?

Microfinance

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Outline

- Microcredit
- Micro-saving
- Insurance for the poor

Microcredit

- History
- Customers
  - Group lending
  - Why women?

Microcredit

- Lenders
  - Rates
  - Subsidies
  - Profits
- Success
  - Repayment
  - Shortcoming
  - Success

History

- Some historical precedents: Monte de Pieta, rural credit coops (19th cent. Eur.), ROSCAS
- Microfinance starts with micro-credit
- Grameen Bank of Bangladesh: funded in 1976 by Muhammad Yunus, Econ. Prof.
- Lend to very poor households, specialize in very small (@ US$100) short-term loans w/o collateral---as moneylenders

Group lending

- Only collateral, reputation
- Lend to groups of five, collectively responsible for payments (diff here): in the event of default, no group member allowed to borrow again.

Group lending advantages

- Solves adverse selection (lack of info.): potential group members, as moneylenders, have this kind of info. The micro-bank using info. that the bank itself has no access to
- Solves moral hazard: group members monitor each other.

Group lending problems

1. Suppose 1 member have problems: The other 4 choose not to pay. To avoid this problem, micro-banks lend sequentially.
2. Groups tend to be too conservative.

Why women?

- 92% of Grameen's customers.
- 1/2 + of NGOs is MIX database: 85%+ of customers.
- ¼ NGOs serve women exclusively.
- women frequently self-employed,
- No access to financial markets:
  - No collateral: property in the name of men
  - No contract: laws do not allow women to borrow

Interest rates

- Grameen: 12% or more in real terms.
- Median for NGOs: 25%
- ¼ NGOs: 37%+

Heavily subsidized

- NGOs: 63% of the funding donations and non-commercial lending.
- Very small loans mean huge administrative costs.
- Basically aid: "helping people to help themselves". Original idea: alleviate poverty.

For profit?

- MIX database:
  - 45% are NGOs
  - 10% are credit unions
  - 5% rural banks (state-sponsored)
  - 10% are banks (for profit)

For profit?

- Is this microfinance? Not according to Yunus.
- Akin to money lenders: extend formal banking to a larger sector to the pop. but not to the poorest

Success: repayment

- Average repayment rates: 97%
- Do not seem to depend on method (group or individual)

Success: shortcoming

- Loans for sewing machines, hens, and the like: to start or expand a micro-business (what money lenders would not touch).
- Poor people have other financial needs: get loans and use them for other purposes.

Success

- Anecdotal evidence: people repay and get another loan
- Best study: randomized experiment in SA: loans increased employment and decrease hunger/poverty.

Micro-saving

- Portfolios of the poor
- Characteristics
- Why are poor households willing to pay to save?
- Saving clubs
- Problems of informal institutions
- Better portfolios
- Grameen II

Micro-saving

- Incomes of the poor are **very** volatile (irregular and unpredictable). We borrow and save to smooth consumption . Poor save mostly for this reason
- Other reason we save (and use insurance) is to face emergencies, etc.

Portfolios of the poor

Ways in which they save:

1. cash in hand
2. loans out to friends or relatives (in cash or kind)
3. home savings (in cash or kind)
4. savings clubs (both borrowing and lending)
5. moneyguard with relatives or friends
6. for profit moneyguard (equivalent of moneylender)
7. physical assets (livestock, land, gold,...)

Characteristics

1. Savings interest free = real interest rate negative.
2. Informal partners: no contracts.
3. No access to formal savings institutions
4. Not unusual to pay **high** fees to save.

Why are the poor willing to pay?

1. Borrowing and lending gives more flexibility: easier cash flow management (more important when poor)
2. For convenience

Saving clubs

Used for larger expenses:

1. life cycle (burials, wedding, births),
2. emergencies,
3. opportunities (education, emigration,...).

Saving clubs

1. **Saving-up club**: simplest version. Accumulates savings. Requires a treasurer--- trust. No interest.
2. **RoSCA** (rotating saving and credit association: Chit in India, Hui in Taiwan, Tontines in Senegal, Kye in Korea): funds given to a member each cycle.
3. **ASCA** (accumulated savings and credit association): funds lend out to members or non-members at interest (in SA they charge 30% a month, as moneylenders)

Problems of informal inst.

1. Unreliability and insecurity (lost, stolen,...)
2. Lack of privacy
3. Lack of transparency (cheating)
4. Mismatch (savings club): you may need the funds when it is not your turn
5. Terms in savings clubs too short

Better portfolios

They need

- Reliability
- Convenience
- Flexibility
- Structure

Grameen II

1. Flexible: passbook savings
2. Structured: Grameen Pension Savings (also used for education or weddings): 1 dollar a month for 5 or 10 years.

Insurance for the poor

- We have seen non-markets mechanisms (mutual insurance societies)
- Platteau: lots of constraints on the kind of events that can be mutually insured.
- Important vacuums.
- Insurance may increase not only welfare but also efficiency.

Insurance for the poor

Alternatives to mutual insurance societies as insurance for the poor:

1. Cooperatives.
2. State-sponsored insurance for the poor in India (less than 10% of Indians covered).
3. Grameen II offers life insurance.