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Credit and Insurance

Macerata 2 May 2013
 Development Economics
 University of Macerata

What kind of credit?

- Different kind of credit market:
 - a) Fixed capital market (new startups or substantial expansion of existing production lines;
 - b) Working capital market (ongoing production activity which happens because of a substantial lag between the outlays required for normal production and sales receipts)
 - c) Consumption credit market (demanded by poor people, this one in particular require for a demand for insurance. Smooth consumption).

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Who provides rural credit?

- Formal or Institutional lenders (government banks, commercial banks, credits bureaus, ...);
- They always require collateral and small plots are not so interesting for them.
- Informal lenders are interested on small plots because most of the informal lenders are large landowners but also (relatives and friends reciprocity) or (cooperatives, credit unions rotating savings and credit associations).
- They have much better information

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Some characteristics

- Informational constraints;
- Segmentation;
- Interlinkage;
- Interest rate variation;
- Rationing;
- Exclusivity.

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Theories of informal credit markets

Lenders' monopoly (empirically could be a local monopoly)

The lenders' risks hypothesis (involuntary & voluntary/strategic default, especially where the legal machinery is not strong owly)

$$p(1+i)L - (1+r) = 0 \longrightarrow i = \frac{1+r}{p} - 1$$

- Where r is the opportunity costs for the lenders. In formal sector the risk is diminished given the legal framework and collateral.
- By the way, formal sector default is around 25% while is 5% in informal sector
- Default and fixed-capital loans.

Default and fixed-capital loans (rarely fixed capital loans because the borrowers will not need loan anymore)

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Theories of informal credit markets I

- **Default and collateral** (valuable or sentimental collaterals for voluntary and involuntary (strategic) default)

Borrower condition $L(1+r) < V_s + F$

Lender condition $L(1+r) > V_B$

Market equilibrium $V_B < V_s + F$

In this case, lender and borrower should be interested on the repayment otherwise there will be the default since the interest rate will be too high or there is not interest to repay by the borrower.

- Default and credit rationing
- Information asymmetries and credit rationing
- Default and enforcement

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Theories of informal credit markets II

- **Default and credit rationing**

- At the going rate of interest in the credit transaction, the borrower would like to borrow more money, but is not permitted to by the lender. Taking into consideration the mental horizon of the borrower

- Production function and total costs to the farmer of borrowing an amount L is:

$$L(1+i)$$

- Where A is the net farmer profit

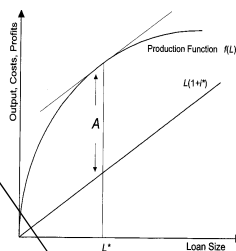


Figure 14.2. Maximizing the rate of interest i on a loan.

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Theories of informal credit markets III

- **Default and credit rationing I**

$$f(L) - L(1+i) \geq A$$

$$N[f(L) - L(1+i)] \geq f(L) + (N-1)A$$

$$f(L) \frac{N}{N-1} L(1+i) \geq A$$

- No default constraint

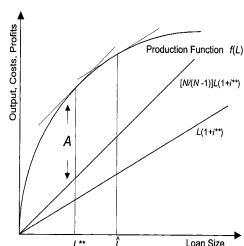


Figure 14.3. Loan contracts when default is possible.

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Theories of informal credit markets IV

- Information asymmetries & credit rationing (safe & risk borrowers)

$$R - (1+i)L \quad p \left[\frac{R'}{L} - (1+i)L \right]$$

$$i_1 = R/L - 1 \quad i_2 = R'/L - 1$$

- As $R' > R$ we have $i_2 > i_1$

- Then

$$\Pi_2 = p(1+i_2)L - L$$

- While

$$\Pi_1 = \frac{1}{2}i_1L + \frac{1}{2}[p(1+i_1)L - L]$$

- Under what condition the lender will charge the lower interest rate?

$$\Pi_1 > \Pi_2$$

$$\text{Thus } p < \frac{R}{2R - R'}$$

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Theories of informal credit markets V

- **Default and enforcement**

- The borrower's profit is

$$f(L^{**}) - (1 + i^{**})L^{**}$$

- But using constraint given by

$$f(L) - \frac{N}{N-1}L(1+i) \geq A$$

- We see

$$f(L^{**}) - (1 + i^{**})L^{**} > f(L^{**}) - \frac{N}{N-1}(1 + i^{**})L^{**} = A$$

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Interlinked transactions

- Hidden interest

- Interlinkages and information

- Interlinkages and enforcement

- Interlinkages and creation of efficient surplus

- Loan repayment in labor

- Loan repayment in output

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Alternative credit policies

- Given the fact that it's not possible for large financial institutions to get microinformation achievable only living too close to the borrowers thus two are the main alternative credit policies:

1. Recognize the role of the informal lenders through encouraging them by expanding formal credit to them;
2. Design credit organizations at the microlevel that will advantage of local information in innovative ways.

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Vertical Formal – Informal linkages

- This approach generate competition among them
- But credit may be made to cooperative
- Possible effects:
 - Costs of monitoring (fixed costs of lending: administering loan, clearing credit histories and tracking the loan to make sure it is repaid);
 - Collusion (collusive behavior among lenders);
 - Differential information among lenders on borrowers' conditions.

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Microfinance: Grameen Bank

Started in mid-1908s by M. Yunus

Lends to very poor households, Lends to groups of borrowers, no repayment by one of them, no credit for all of them;

Small credits (100 \$), No collateral

Nominal interest rate is around 20% (12% real)

90% are women and Repayment over 97%.

Positive assortative matching (self-selection);

Peer monitoring;

Potential drawbacks (when one member in difficulties then the others made the same. Sequential lending).

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Insurance: basic concepts

- Self-insurance
- Credit
- Difference between credit and insurance

Good,good	Good,bad	2,000;2,000	2,000;0
Bad,good	Bad,bad	0;2,000	1,000;1,000
		2,000;2,000	1,500;1,500
		1,500;1,500	1,000;1,000

- Degree of correlation (negative or positive)
- Reciprocity.

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The perfect insurance model

- Farmer's income (Y) is given by

$$Y = A + \varepsilon + \theta$$

- Where Y is the average income
- Where ε is the individual negative shock probability
- And θ the local negative shock probability
- Then the typical farmer's insured income is now given by

$$\bar{Y} = A + \theta$$

- The problem is given by θ because it's generalized to all the farmers

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Limits to insurance:

- Information
- Limited Information about final outcome
- Limited information about what led to the outcome (moral hazard)

$$p u(H) + (1 - p) u(L) - C$$

$$q u(H) + (1 - q) u(L)$$

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

- With insurance the utility of the expected output exceeds the expected utility of output

$$u(p(H) + (1 - p)L) > p u(H) + (1 - p) u(L)$$

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Limits to insurance:

- Information: Limited information about what led to the outcome (moral hazard)
- Considering farmer's net consumption (X) and output produced (Y)

$$p X(H) + (1 - p) Y = p H + (1 - p) L$$

- Then the higher effort will be made if and only if

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

- That is the resultant of ... substituting X for H and Y for L

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

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Limits to insurance:

- Information: Limited information about what led to the outcome (moral hazard)

- Then rearranging the

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

- We have $(p-q)[u(X) - u(Y)] \geq C$

- Thus the closest that X and Y can get without upsetting the desired incentives is given by

$$(p-q)[u(X) - u(Y)] = C$$

- This is a second best insurance scheme - the best one can do when incentives pose a constraint

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Limits to insurance:

- Enforcement: Enforcement-based limits to perfect insurance

- Average $p H - (1-p)L = M$

- Gain $G = u(H) - u(M)$

- Loss $L = N(u(M) - [p u(H) + (1-p)u(L)]) + S$

- Enforcement constraint

$$N(u(M) - [p u(H) + (1-p)u(L)]) + S \geq u(H) - u(M)$$

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Limits to insurance:

- Enforcement: Enforcement and imperfect insurance

$$p X + (1-p)Y = p H + (1-p)L = M$$

$$N(p u(X) + (1-p)u(Y)) - [p u(H) + (1-p)u(L)] + S$$

$$N(p u(X) + (1-p)u(Y)) - [p u(H) + (1-p)u(L)] + S \geq u(H) - u(X)$$

$$u(X) + N[p u(X) + (1-p)u(Y)] \geq u(H) - N[p u(H) + (1-p)u(L)] - S$$

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Limits to insurance:

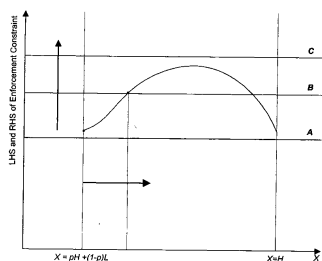


Figure 15.1. The enforcement constraint and imperfect insurance.

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Limits to insurance:

- Self-insurance and mutual insurance
- Correlated shocks
- The blurring of credit and insurance

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