

Economics of Information

LECTURE 6

Jacopo Staccioli[†]

[†] *Institute of Economics, Scuola Superiore Sant'Anna*

9th April 2018



red-lining

excluding certain observationally distinct groups from credit markets, rather than offering those members of those groups a contract that demands higher interest payments and collateral requirements

credit rationing

among observationally identical borrowers, some get loans while others are denied credit; the latter are strictly worse off than those who are granted loans

Stiglitz and Weiss (1981, 1983)

- banks might not increase the interest rate charged on loans even when there is excess demand for funds
- the probability of default might increase
- possible inverse relation between interest charged and bank profits
- high interest rates
 - **sorting**: reduce the proportion of low risk borrowers
 - **incentive**: induce borrowers to use riskier techniques
- increasing collateral requirements
 - **incentive**: borrowers are less willing to take risks
 - **sorting**: adversely affect the mix of applicants
- these effects were studied in isolation

Stiglitz and Weiss (1992)

- simultaneous account of selection and incentive effects
- banks set the terms of the loan contract
 - price: interest rate
 - non-price: collateral
- richer strategy space available to lenders
- but market equilibrium is still characterised by credit rationing
 - every risk class of borrowers may be rationed
 - rationing may occur at every contract
- pooling equilibria may arise
 - low- and high-risk individuals borrow at the same terms

differing sets of feasible techniques

- allows the set of feasible techniques to differ across borrowers
- if techniques available to the poor stochastically dominate those available to the rich
 - i.e. if given techniques A and B it holds

$$\forall R, \text{Prob}[A \geq R] \geq \text{Prob}[B \geq R]$$

$$\exists R, \text{Prob}[A \geq R] > \text{Prob}[B \geq R]$$

- then a lender would be less likely to increase collateral
- reinforces the conditions for a pure pooling equilibrium

continuum of projects

- consider a pure pooling equilibrium
- define $r^*[z, C] = \arg \max_r v_z\{r, C_p\}$
- if $v\{r^*, C_p\}$ exceeds the maximum return of a loan to a rich borrower
- and if there is excess demand for credit when $\{r^*, C_p\}$ is offered
- then offering contract $\{r^*, C_p\}$ is a pure pooling equilibrium
- similar arguments also extend partially separating and completely separating contracts with rationing

many types of borrowers

- each type of borrower has a different endowment C_0^i , $\#\{i\} > 2$
- pure pooling equilibrium: all borrowers choose the analogous of $\{F\}$
- partial pooling equilibrium: assume that richer borrowers prefer contracts with higher collateral requirements
- start with the wealthiest borrower
- contract $\{G_1\}$ that maximises returns for that type determines the (equilibrium) return $v\{\cdot\}$ for all other loans
- the proportion of wealthiest borrowers getting loans at $\{G_n\}$ ensures that return on $\{G_{n+1}\}$, requiring collateral that is affordable to the next wealthiest borrowers, equals $v\{G_n\}$ for all $n = 1, \dots, \#\{i\}$
- $\exists L(\cdot)$ such that rationing occurs at *each* type of borrowers

Concluding remarks

- combining adverse selection and moral hazard considerations in the same model leads to patterns of equilibria that differ from those arising when either is present in isolation
- equilibrium may be characterised by complete or partial pooling
- there may be (partial) self-selection and rationing
- rationing can arise at all contracts
- unobtainable in Stiglitz and Weiss (1981, 1983)

conditions for rationing

- 1 residual uncertainty after lenders optimally choose r and C
- 2 strong agency problems that induce lenders to not fully exploit r and C
- 3 $L(\cdot)$ is such that at the Walrasian equilibrium (demand = supply, and non-price instruments are taken into account) expected returns to the lender is lower than at other contracts where rationing occurs

Thank you for your attention!

see you tomorrow
Tuesday, 10th April
h. 17:00 – Aula 14 DAF

