

Credit II

11/25/2008

Today's Agenda

1. Finish up theories of informal credit markets (14.3)
2. Interlinked Transactions (14.4)

So far--

- We have studied markets in credit
- Imperfections arise in these markets—high interest rates & credit rationing
- Main source of these imperfections are limited information and enforcement which give rise to *risk* of default

E. Default and credit rationing

- Another implication of the risk of default—credit rationing
- Credit rationing: a situation in which at the going rate of interest in the credit transaction, the borrower would like to borrow more money but cannot
- Let's see how risk of default leads to credit rationing

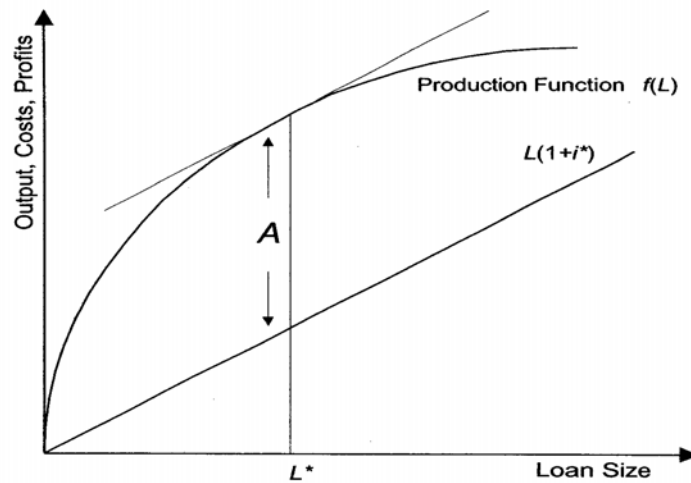


Figure 14.2. Maximizing the rate of interest i on a loan.

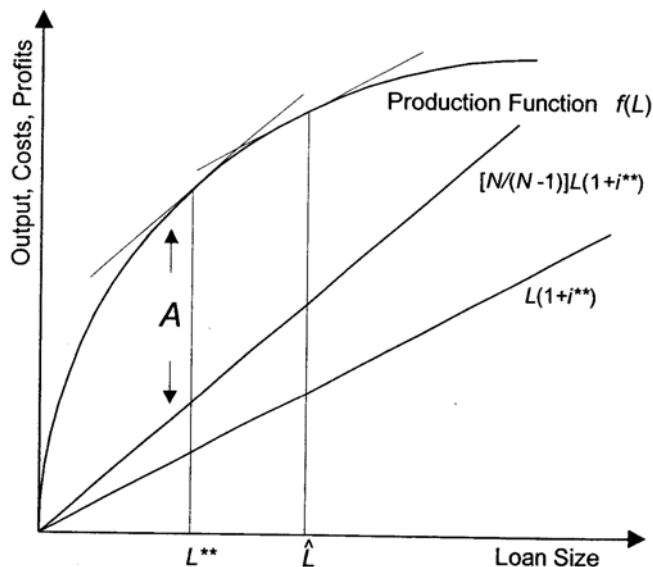


Figure 14.3. Loan contracts when default is possible.

- At the optimum credit transaction, lender will advance L^{**} : the marginal product of the loan equals $N/(N-1)(1+i^{**})$ and not the true marginal product of the loan as faced by the borrower which is $1+i^{**}$
- Borrower would like to borrow more at the going interest rate i^{**} ($L\text{-hat}$) but cannot—credit is rationed.
- But the moneylender will not react to such a situation because a higher loan increases the return to a defaulter by allowing him to pocket more money. A higher interest rate increases the return as well, by allowing the defaulter to save on the repayment of more interest.
- Thus, the moneylender's preferred contract involves credit rationing

F. Informational asymmetries and credit rationing

- Not all borrowers bear the same amount of risk, some are high-risk and some are low-risk borrowers
- Risk may be correlated with characteristics of the borrower that are unobservable to the lender
- This leads to a situation in which the interest rate affects the mix of clients that are attracted
- Now the lender will set a rate which there are some potential borrowers don't get anything but lenders do not raise interest rates because they will attract too many high risk customers.
- Let's look at this model of credit rationing

2. Interlinked Transactions

- Most lenders in villagers are also landlords, shopkeepers or traders
- These lenders make terms of transaction in one market (land or labor) depend on terms and conditions in another (credit)
- Thus, we see segmentation in credit markets along occupational lines, and the complementarity of some production relationship facilitates the credit relationship
- Details of borrower-lender pairs by occupation of both individuals

Table 14.1. Distribution of informal loans by size and tenurial status of borrowers, Punjab and Sindh, 1985.

Borrower	Punjab			Sindh		
	Friends/ relatives	Land- lords	Traders	Friends/ relatives	Land- lords	Traders
Tenant						
Marginal	3	3	1	3	12	3
Small	6	22	5	12	62	6
Medium	5	17	5	5	13	2
Large	2	16	6	2	2	1
All tenants	16	58	17	22	89	12
Owner-tenant						
Marginal	2	2	1	—	—	—
Small	9	11	7	4	4	6
Medium	7	7	10	3	5	4
Large	9	10	13	7	1	4
All owner-tenants	27	30	32	14	10	14
Owner						
Marginal	23	2	5	7	—	8
Small	17	4	13	24	—	23
Medium	10	4	12	17	—	18
Large	7	2	21	16	—	25
All owners	57	12	51	64	1	74
Total	100	100	100	100	100	100

Source: Mansuri [1997].

- Why do we see interlinked transactions?
- Let's study some models which show how interlinked transactions dominate pure credit transactions
 - A. Hidden Interest
 - In some societies, explicit charging of interest is forbidden or shunned e.g. Shariaat law
 - So, interest may be asked for in secondary forms and loan is interest-free
 - Interlinked contracts can provide hidden interest
 - B. Interlinkages & Information
 - By using interlinked contract, lender can lower costs of monitoring
 - Rice trader has to get output from farmer anyway, so he'll just take more as interest
 - Not only that, his debt takes priority over others; he gets first claim
 - C. Interlinkages & Enforcement
 - Lender with interlinked contract has a pre-existing instrument to make borrower repay

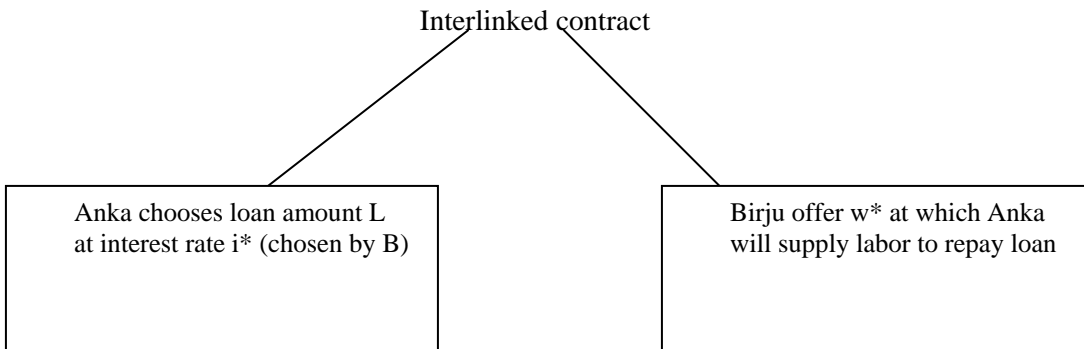
- For example, landlord offers a tenant a contract that stipulates tenant will be evicted unless output meets certain minimum
- As we know, the tenant will need some incentive/surplus to not shirk
- Now if the tenant also needs a loan, this loan can be supported by an “interlinked threat”—if the loan is not repaid, tenancy will be removed

D. Interlinkages & Creation of an efficient surplus

- Interlinkages may lower “distortions” that cause loan amounts to be inefficient (there is a higher total surplus possible)
- Loan amount at going rate may be less than what the lender would actually like to provide—interlinkages prevent this
- Let’s see some examples

i. Credit-Labor interlinkages

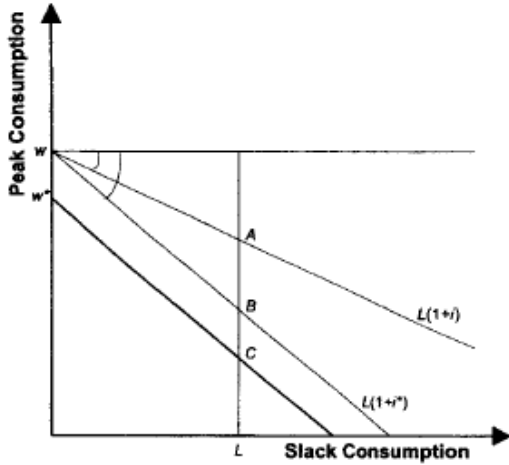
- Anka is rural laborer who must feed herself through slack and peak season
- She earns wage w in peak season, but zero in slack season
- She cannot save and must borrow in slack season
- Birju is a large landlord who hires labor in peak season
- He also has access to funds, he can get interest rate i in formal sector
- Birju and Anka can interlink labor-credit contract.



- What does it mean if $w^*=w$ and $i^*=i$?
- How will i^* and w^* be chosen?

- Following figure shows the total return to Birju from a contract of the form (w^*, i^*)

$w^* < w$ & $i^* > i$
 Loan is repaid with interest
 in both cash & labor



$w^* < w$ & $i^* < i$
 Loan subsidized in cash terms
 repaid in labor only

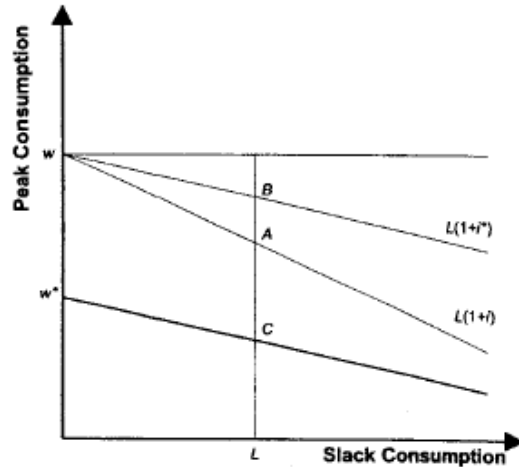


Figure 14.4. Birju's return from a contract (w^*, i^*) .

- Total return to Birju $AC = AB$ (interest return) + BC (employment return)
- The next figure shows Anka's preference over loans represented by indifference curves

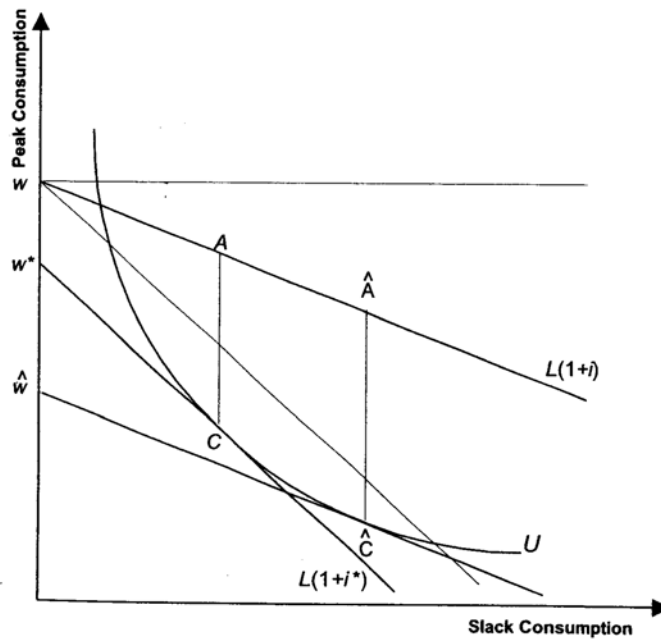


Figure 14.5. Anka's return from a contract (w^*, i^*) .

- Given some contract (w^*, i^*) , what is Anka's budget line?
- We see that her utility-maximizing bundle is C, Birju's profit is AC

- Can we make Birju better off without lowering Anka's utility i.e. make a Pareto-improvement?
- \hat{A} , \hat{C} achieves this—Birju should lower wage and interest rate
- Thus, the interlinked contract dominates—no extra interest charged on loan, all payments made in “labor unit”
- Intuition—the contract that maximizes surplus is the one that taxes her labor but does not distort her loan incentives. Similar to the argument between lump-sum vs. on-the-margin tax

ii. *Credit-Output interlinkages*

- Another possible distortion in credit contracts—from production loans
- Rahul is a small rice farmer
- Ayesha is a rice trader
- Rahul sells crop to Ayesha who markets it, he also needs working capital loan as an input to production
- Ayesha can get loans from formal sector at rate i
- Figure below denotes production function

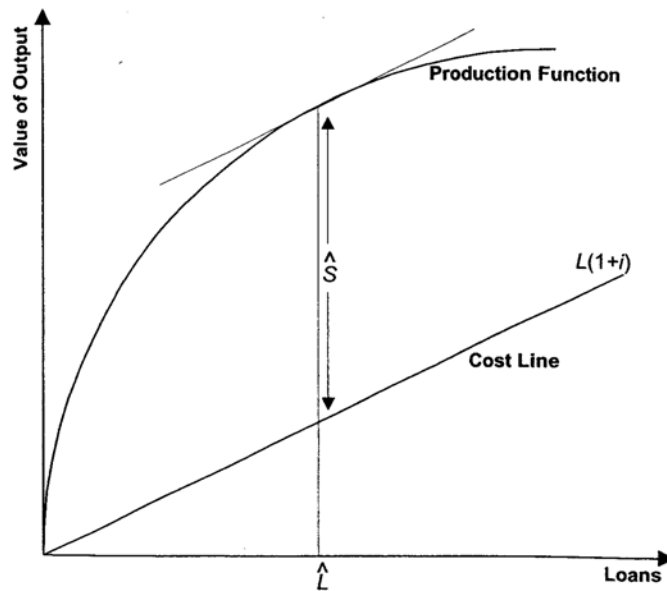


Figure 14.6. Working capital, output, and interest.

- Total cost of getting loan is cost line
- Say Rahul could get loans at rate i as well, then what loan size would he choose— \hat{S} hat
- So \hat{S} is the maximum **total** profit that can be generated
- But Rahul cannot get loans at this rate because of imperfect credit markets and thus, he approaches Ayesha for a loan (his outside option is some A)
- Thus $\hat{S} - A$ is the maximum amount Ayesha can expect to get out of Rahul
- She offers a contract of the form (p^*, i^*) where p is the price she buys rice from Rahul—an interlinked contract
- What is the pure credit contract?

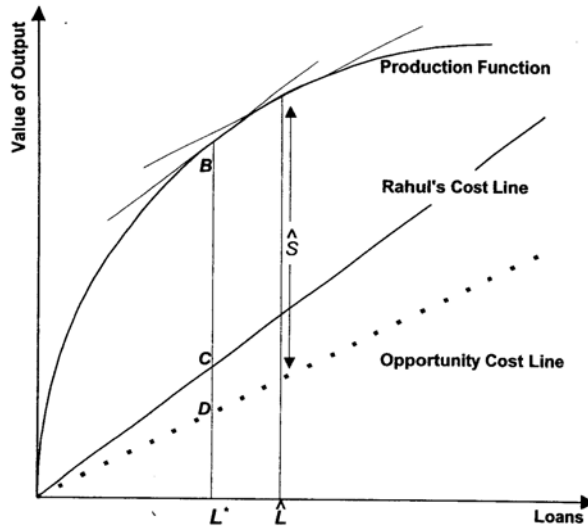


Figure 14.7. A pure credit contract.

- Now, Ayesha's is CD, Rahul's profit is BC
- Total is $BC + CD < S\text{-hat}$
- Is there a better contract around?
- Such a contract would make Rahul choose $L\text{-hat}$, but give Ayesha more surplus
How can we find this?

$$S\text{-hat} = pQ\text{-hat} - (1+i)L\text{-hat}$$

Imagine the contract being such that Ayesha is imposing a "tax" of t per dollar on the combined operation

$$tS\text{-hat} = ptQ\text{-hat} - (1+i)tL\text{-hat}$$

Define $p\text{-hat}$, $i\text{-hat}$ such that $p\text{-hat} = pt$ and $i\text{-hat} = (1+i)t$

By construction, this new contract is doing is implicitly allowing Rahul to borrow at Ayesha's available rate and then taxed at rate t

So since his interest rate isn't too high, his choice of loan isn't distorted

Rahul makes A

Ayesha makes $S\text{-hat} - A$

- Note the interlinked contract involves lower price and an interest rate that is below the formal sector!

Next time: Finish Chapter 14 & start Chapter 15

