Economics of Banking
Lecture 1

February 2023

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Overview

What is banking theory all about?

Our course has two parts:

- Microeconomics of banking: Analysis of financial intermediation, loans, interest rates, losses, defaults
- Risk management: How banks can control their risk

Main problems in banking theory 1

- Why are there banks?

Key competences of financial intermediaries,
Should banks hold diversified or specialized portfolios?
Big or small banks?
Ownership of banks

- Credit allocation: Why is there rationing?

Use of collateral
Credit rationing and its impact on society
New financial products

Main problems in banking theory 2

- Liquidity transformation, why and how?

How is can illiquid assets be transformed to liquid assets?
Role of deposits
Bank runs and panics
Deposit insurance, public or private?

- Maturity transformation, how and why?

Loans for resale
Securitization

Main problems in banking theory 3

- Regulation of banks, how?

Who should regulate and when?
Deposit insurance: who should pay and how much?
Capital requirements

- Borrowers' choice of financing

Banking competition
Banks and non-banks
Role of brokers

Simple GE model, consumers

Economy with: 1 consumer, 1 producer, 1 bank, 2 periods $t = 0, 1$, one good.

Consumer chooses bundle (x_1, x_2) maximizes $u(x_1, x_2)$ under budget constraint

$$x_0 + b^c + s \leq \omega \text{(consuming, buying bonds and saving)}$$

$$px_1 \leq (1 + r)b^c + (1 + r_d)s + \pi^p + \pi^b \text{(selling the bonds, receiving deposits).}$$

Since utility is maximal, saving is 0 if the deposit rate is below the market rate.

Simple GE model, producers, banks

Producer invests z at $t = 0$, gets $y = g(z)$ at $t = 1$ so as to maximize profits

$$\pi^p = pg(b^p + l) - (1 + r)b^p - (1 + r_l)l.$$

In optimum, loans are 0 if the loan rate above the market rate.

Bank offers credits l funded by deposits s and bond issue b^b, profits are given by

$$\pi^b = (1 + r_l)l - (1 + r)b^b - (1 + r_d)s.$$

Simple GE model: no banks

Bank's profits are 0 unless

$$r < r_l \text{ or } r_l > r_d.$$

If $r < r_l$ the producer doesn't use the bank, so $r \geq r_l$.

But then the consumer doesn't want to use the bank.

Conclusion: Either there is no activity in the bank or $r_l = r = r_d$, meaning that the bank is just duplicating the bond market!

What went wrong?

The model must have serious shortcomings, but which?

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(2) No uncertainty? Uncertainty can be included in the form of contingent commodities — back to (1).

(3) Uncertainty **plus** asymmetric information: This will open up for financial intermediation in several ways!

Liquidity insurance model

Investment project: For each unit invested at $t = 0$, get $R > 1$ at $t = 2$. At $t = 1$, money is needed with probability π. But taking it out gives only $L > 1$.

Consumption plan (c_1, c_2), where

- c_1 is consumption at $t = 1$ if consumer is impatient (otherwise 0)
- c_2 is consumption at $t = 2$ if patient (otherwise 0).

The consumer maximizes utility

$$U(c_1, c_2) = \pi u(c_1) + (1 - \pi) u(c_2).$$

There are several possible scenarios:

1. Autarchy

If the consumer is alone, the constraints are

$$c_1 = 1 - I + LI = 1 - I(1 - L),$$
$$c_2 = 1 - I + RI = 1 + I(R - 1).$$

Then $c_1 \leq 1$, with equality only for $I = 0$.
Also $c_2 \leq R$ with equality only in the case that $I = 1$.
In particular, the consumption plan is inferior to $(1, R)$.

2. Money market

Sell the investment at $t = 1$ at price p (per unit outcome at $t = 2$). The constraints are

$$c_1 = 1 - I + pRI,$$
$$c_2 = \frac{1 - I}{p} + RI = \frac{1}{p}(1 - I + pRI).$$

Price p must clear the market: Equilibrium only if $p = \frac{1}{R}$ (Why?).

Then consumption plan is $(c_1, c_2) = (1, R)$ better than autarchy.

But there is still room for improvement:

3. Social optimum

Maximize $U(c_1, c_2)$ under constraints

$$\begin{aligned} \pi c_1 &= 1 - I, \\ (1-\pi) c_2 &= RI. \end{aligned}$$

First order conditions: Insert c_1 and c_2 to obtain

$$U(c_1, c_2) = \pi u\left(\frac{1-I}{\pi}\right) + (1-\pi) u\left(\frac{RI}{1-\pi}\right),$$

and take derivatives w.r.t. I to get

$$u'(c_1^0) = Ru'(c_2^0),$$

where (c_1^0, c_2^0) is the social optimum.

Better than the market solution

Social optimum (c_1^0, c_2^0) typically differs from $(1, R)$:
Equality only if $u'(1) = Ru'(R)$, which will happen only by exception.

Assuming that u is such that $zu'(z)$ decreases in z, then

$$R > 1 \text{ and } c_2^0 \leq R \text{ implies that } Ru'(R) < 1 \cdot u'(1) = u'(1),$$

so that $c_1^0 > 1$ (risk aversion: consumers want the payoffs in $t = 1$ and $t = 2$ to be almost the same).

Deposit contracts

Implementing the social optimum:

Create a bank offering contingent deposit contract:
Deposit 1 at $t = 0$, get c_1^0 if impatient, c_2^0 if patient.

This contract is feasible, the bank has enough liquidity to pay all the consumers when they show up.

No documentation of impatience is needed – no advantage of pretending to be impatient!

(There may however be problems if we introduce expectations into the story – as we shall do at a later stage)