Lecture 17

Money and Banking, Econ 345

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Financial intermediation

- 3-period OLG model with fiat money, capital and inside money (IOUs)
- In $t+1$ the bank owes n goods to current middle-aged but it has no payoff from capital - what should it do?
- Borrow again from the period t young, n goods to be paid off to current middle-aged
  - will owe next-period middle-aged the real return of n^2
- In $t+2$, obtain payoff from capital x and pay off n^2 to middle-aged
- Profits:

$$x - n^2 = 1.44 - 1.21 = 0.23 > 0$$

- Such activity of arbitrage represents *financial intermediation*, or *banking*

Banking in competitive equilibrium

- Suppose many banks are competing with each other
  - each can costlessly issue IOUs and invest in capital
  - what is the rate of return r^* on IOUs in competitive equilibrium?
- From previous example we know that return on IOU must be at least equal to return on money $n = 1.1$
- But a competitor can charge a slightly higher rate of return, say $r = 1.11$ and attract all investors
  - still makes positive profits: $x - r^2 = 1.44 - 1.23 = 0.21 > 0$
- But then another bank can offer yet higher rate of return, say $r = 1.12$ and still make profits, etc....
- Equilibrium return on IOUs must be such that profits are zero: $x - r^{*2} = 0$
  - no further incentive to offer higher rate of return

Effect of intermediation

No intermediation:

- capital was used to acquire consumption in 3 period of life
- money was used to acquire consumption in 2 period of life

With intermediation (can enforce inside money):

- inside money replaces fiat money for acquisition of consumption in 2 period
- people invest in capital directly, and through intermediaries
- intermediation helps mobilizing savings for investment in capital
- more capital implies more output
- owners of fiat money (initial middle-aged) are worse off

Exercise 7.2 from CF

Suppose the intermediation of capital costs ϕ units of the consumption good for each unit of capital intermediated ($\phi < \sqrt{x}$). Assume these transaction costs occur when agents withdraw from banks (when they are middle-aged). What will be the equilibrium rate of return offered by intermediaries if they are the ones who bear the transaction costs? For what values of ϕ, x, μ, n will fiat money be valued in this economy?

Exercise 7.2 from CF

This model is identical to the one discussed in the paragraphs preceding this exercise. In that model, $\phi = 0$. If intermediaries were to offer a one-period rate of return to depositors of $\sqrt{x}$, they would actually have negative profits. A rate of return of $r^* = \sqrt{x} - \phi$ would result in zero profits for the intermediation industry. (Work through the details to see that this is true. To do this, mimic the arguments presented in the section "The effect of arbitrage on equilibrium.") In the absence of reserve requirements, fiat money will only be valued if its rate of return (n/μ) is at least as high as the rate of return on bank deposits (r^*). We must have that $n/\mu \geq \sqrt{x} - \phi$.