

Banks and the macroeconomy

Econ 4335 Lecture

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Diamond-Dybvig goodbye?

- ▶ Banks deal with money, not goods
- ▶ Loans create deposits
- ▶ Deposits are recirculated from bank to bank
- ▶ If deposits are changed to currency, CB prints more.
- ▶ Banks are intermediaries. Others make the real investments.
- ▶ Banks form the core of the payment system.
- ▶ Bank defaults can spread through the payment system.

Remains of D-D

- ▶ Liquidity insurance
- ▶ An illiquid bank can be forced to hold fire sale
- ▶ Runs as multiple equilibria
- ▶ Banks are the first to run on banks

How is monetary policy transmitted to the real economy?

- ▶ Monetarists, banking school, Neo-Wicksellians

Monetarist view

- ▶ CB determines $M0$
- ▶ Banks keeps a fraction $0 < \kappa < 1$ of deposits D in reserve
- ▶ The public keep a constant amount of currency, C^*
- ▶ Max deposits are $(M0 - C^*)/\kappa$
- ▶ Banks lend until D has reached its max value
- ▶ Supply of money is then

$$M1 = [(M0 - C^*)/\kappa] + C^* = \frac{1}{\kappa}[M0 - (1 - \kappa)C^*]$$

$1/\kappa > 1$ is the money multiplier

Monetarist view 2

- ▶ Interest rate determined by equilibrium between supply and demand for money:

$$\frac{1}{\kappa}[M0 - (1 - \kappa)C^*] = Pm(i, Y)$$

- ▶ Quantity of money may also have more direct effect on demand

The text-book view

- ▶ CB sets the interest rate
- ▶ changes in the policy rate are passed on directly to firms and households
- ▶ Economy works as if loans went directly from households to firms

The real side

$$C = C(Y - T, \bar{Y} - \bar{T}, W, i - \pi_e) \quad (1)$$

$$S_p = Y - T - C, \quad S_g = T - G \quad (2)$$

$$W_p = (QK_0 + B_0)/P \quad (3)$$

$$Q = Q(i - \pi_e)/P \quad (4)$$

$$I = I(Q/P) \quad (5)$$

$$Y = C + I + G \quad (6)$$

Sectoral balances

Instrument	Gov.	CB	Banks	Firms	Househ.	Sum
CB Deposits		$-M0$	$M0$			0
Bank deposits			$-D$		D	0
F-loans		L_r	$-L_r$			0
Bank loans			L	$-L$		0
T-Bills	$-B$	B_c	B_b		B_p	0
Real capital				QK		QK
Net Worth	$-B$	0	0	E_f	E_p	0
Shares				$-E_f$	E_f	0
Wealth	$-B$	0	0	0	$QK + B$	QK

Table: Sectoral balances

Three arbitrary assumptions

$$M0 = \rho D, \quad \Delta L = \lambda PI \Delta t., \quad B_p = \beta B \quad (7)$$

where ρ is a function of the difference between the policy rate and the penalty rate.

Flow of funds

$$\Delta L = \lambda PI \Delta t \quad (8)$$

$$\Delta B_p = \beta PS_g \Delta t \quad (9)$$

$$\Delta B = -PS_g \Delta t \Delta D = \Delta L + \Delta B - \Delta B_p \quad (10)$$

It is more complicated than you think

- ▶ Interest rates are not equal to the policy rates: Credit risk, liquidity risks, interest rate risk
- ▶ Banks set credit limits and loan conditions
- ▶ Unexpected changes in interest rates redistribute between debtors and creditors
- ▶ Loans are not just for investment in fixed capital.
- ▶ Cost differ between internal and external financing

Diversifiable credit risk

Default premium:

$$i_L = i + px \quad (11)$$

i_L , interest rate on loan, i safe interest rate, p probability of default, x loss if default

- ▶ Many independent loans, Law of large numbers
- ▶
- ▶ Higher interest rate Not higher cost of capital,
- ▶ Bankruptcy costs adds to capital cost (Disyatat)
- ▶ Higher i raises p . i_L up more than i

More on diversifiable credit risk

- ▶ Borrowers more optimistic than bankers?

Macro credit risk

- ▶ Risk neutrality ; Same formula as ()
- ▶ Requires risk premium if risk-averse

The interbank market and liquidity risk

- ▶ Interbank loans crucial for liquidity
- ▶ Failing to pay on time can be devastating for a bank.
- ▶ Risk premiums can vary a lot
- ▶ Interbank sometimes breaks down.
- ▶ Benchmark for interest rates

Read more in Holmstrom and in Rodseth