Money

- Financial asset that pays a relatively low return -- why do people hold it?
- Fractional reserve banking -- the money creation process.
- Banking panics and bank runs.

Motives for holding money

- Medium of exchange -- avoids double coincidence of wants.
- Unit of account -- $ provide a good yardstick.
- Store of value -- mattress savings.

Money demand

- The real opportunity cost of holding money is the nominal interest rate (lose the real return on bonds plus the loss of purchasing power from inflation)
- As incomes increase, households hold more money.

$$M^d = L(i, Y)$$
$$\text{-}\text{+}$$

Money supply:

- Set by Federal Reserve through open market operations.
- Equilibrium in money market determines the (nominal) interest rate

Measuring Money

- Money is any asset that can be used as a medium of exchange.
- Two most frequently used measures:
  - M1 = sum of currency outstanding and balances held in checking accounts
  - M2 = All assets in M1 plus other savings vehicles that can be used to make payments (e.g. savings deposits, money market mutual funds)

Fractional reserve banking and money creation

- Households deposit currency in banking system.
- Banks holds some fraction in reserve and lend out the rest.
- Loan proceeds are re-deposited in the banking system.
- Banks again holds some fraction in reserves and loans out the rest.
- Process continues until system is fully ``loaned up''.

Bank Balance sheets in the money creation process

	Assets			Liabilities	
Bank A	Cash	100		Deposits	100
Bank A	Cash	10		Deposits	100
	Loans	90			
Bank B	Cash	90		Deposits	90
Bank B	Cash	9		Deposits	90
	Loans	81			

Bank balance sheets after lending

Bank A	Cash	10	Deposits	100
	Loans	90		
Bank B	Cash	9	Deposits	90
		81		
Bank C	Cash	8.1	Deposits	81
	Loans	71.9		
Banking System	Cash Loans	100 900	Deposits	1000

Determining the quantity of deposits

- Question: How many deposits can $100 in reserves support?

- Bank Deposits = Bank Reserves/Reserve ratio

- If reserve ratio = 0.1 (10% of deposits are held in reserves), then deposits = $1000

Example: The money supply with currency and deposits

Suppose $50 are held in currency and $50 is deposited in the bank as bank reserves.

In general, we have

Money supply = currency + reserves/reserve ratio

In this example:

Money supply = currency plus deposits.

$$= \$50 + \$50/0.1 = \$550.$$

Bank Runs

- Self fulfilling expectations: if people believe bank will fail, they will run on the bank to withdraw their money.
- If everyone withdraws their money at once, bank cannot cover the withdrawals given reserves on hand.
- Bottom line: fractional reserve banking makes system vulnerable to runs.
- Possible solution: Deposit Insurance (but this has incentive problems – bank managers take too many risks).

Activities of Federal Reserve

- Conduct of Monetary policy:
  - Open Market Operations
  - Discount window lending: Fed can lend bank reserves directly to commercial banks
  - Reserve requirements: Fed can change the required amount of reserves that must be held by banks.
- Bank Supervision and Regulation
- Financial stability – eg. Lender of last resort, supply liquidity to market, guarantee payments system.

Open Market Operations

- The Federal Reserve can change the money supply by buying or selling govt. bonds from the public.

- Increase money supply:
  – Fed buys $1000 in govt. bonds from the public
  – These govt. bonds are paid for using currency which is deposited in banking system as bank reserves.
  – If reserve-deposit ratio is 10%, the money supply will increase by $10,000 owing to money multiplier.

  Conclusion: Money multiplier effect gives the Fed significant leverage to change money supply by changing quantity of bank reserves.